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computers on the outsiness scene. But the feeting is always the same.

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Honeywell

About the Guide

The Computerworld Buyer's Guide to Computer Systems is a reference manual containing concise descriptions of computer system products and short profiles of the yendors selling these products

The ouide is divided into four major product sec mainframes (Section A) superminicom nuters (Section B): minicomputers/small business ms (Section C); and microcomputers (Section D). Each of these sections is preceded by a divider.

with a fold-out tab identifying the product section Vendors are listed alphabetically within each sec tion. Each vendor's products are also listed alphabeti celly

In addition to the four product sections there is a separate vendor profile unit (Section V) Appearing in the front of the stride is a r

Appearing in the front of the guide is a magazine dustry markets and technical information for specific product categories and issues related to computer say

Also featured in the guide is a vendor/product in dex. a price index and an advertiser's index. At the back of the made there is a list of computer associations and user groups sorted by the location of these groups and a calendar of important events. listed by date through October of 1983

DEENTIONS

For purposes of this guide the following defini tions apply Mainframe: A mainframe is a general nursose

computer system that is usually priced from a low price of about \$100,000 to popurely of coveral million dollars. These systems usually have a word length greater than 32-bits and an enormous amount of on line storage. It requires special environmental conditions and is housed in a separate room

Superminicomputer: Although smaller than a mainframe, the superminicomputer, also a general purpose system, often has a power range and price structure that overlaps that of a low-end mainframe. Generally superminis have a word-length of 32-bits Although they are high performance systems, they do not have the throughput of mainframes.

Minicomputers: These systems are penerally distinoushed by 16.hit architecture although other word lengths are also used. They are general purpose in nature, but can also be sold as tools or as a pack aged solution. They can operate effectively as small

business systems or distributed processors Small Rusiness Systems: These units built around either minicomputer or microcomputer architecture, are ornerally marketed to smaller businesses and are often sold with packaged application software

Microcomputers: This category of products is di verse, generally encompassing systems built around 8-bit or 16-bit architecture with varying power canability. Included within the microcomputer tab are standard microcomputers, high-end supermicr personal computers, desktop computers, hand-bi computers, and portable computers.

PRODUCT LISTINGS

Specific product listings in the Computerworld Buy or's Guide to Computer Systems contain details about the product's operating system, word length, languages supported, minimum and maximum memory capacity, maximum on-line storage, comm protocols supported, sales and maintenance information and, where possible, the number of units in-

stalled to date Each vendor's product listing also contains a cross reference directing the reader to the appropriate page

for the vehdor's company profile The prices of computer systems listed in this a generally span a range. This range is comprised of the price of a small configuration of the vendor's product and the price of a large configuration of the product A configuration consists of the processor, an on-line storage device, a hard-copy device, a terminal and a

tape or other backup storage device where appropri-If vendors did not provide a price range for their systems the price shown in the product listing is t

price for an average or medium or small or large con figuration The maintenance fees shown in the products list-ing are monthly fees.

About the Guide

COMPANY PROFILES

The company profile section of the Computerworld
Buyy's Guide to Computer Systems consists each
wordor's address and telephone number as well as a
listing of key management, marketing and/or technical persongle within the lim. In addition, the profile
uncludes the company's target markets, revenue, and
geographic market coverage, among other details.

Note: Vendors were offered the option of placing their company name in a larger type-face than the standard listing size. Vendors were also offered the opportunity to add a boxed insert at the the end of opportunity to add a boxed insert at the the end of their listing. These options were paid for by the ven-dors and should in no way be construed as an endors and should in no way be construed as an en-dorsement of these companies or products by the publishers of the Computerworld Buyer's Guide to Computer Systems.

VENDOR/ PRODUCT INDEX

The vendor/product index provides a quick glimpse of specific vendors and products featured in the guide. The index is arranged alphabetically by vendor, followed by the name of each product listed in the product section of the guide. A section and page, number follows each product name to allow the reader to easily find the products he or she is interested in

learning about. An excernt from this index is shown below

PRICE INDEX

A price index is featured in the Computerworld Buy A price index is featured in the Computerworld Buy-** Guide to Computer Systems (so we readers a sim-pilled view of the cost of specific products. The price index is dwired inno 10 ranges, with wendoos listed al-most a standard from 10 ranges, with wendoos listed al-cells expert and its price and a page returns. If a reader has determined the approximate amount, he or she is prepared to spend for a particular system, the price index provides a means of narrowing down the necessary prospects and thus eliminating unnecessary browsing in the product section of the guide.

Systems Under \$5,000

Editor's Note

The Computerworld Ruy. er's Guide to Computer Systems is the premiere issue of a series of market specific reference guides that will be published on a regular basis throughout the year During 1983, in addition

to the computer systems guide. Computerworld will also publish a Buyer's Guide of finding information even to Terminals & Peripherals in early October and a Buy er's Guide to Software that will appear in late Novem-ber. Other volumes covering additional specific markets will appear in 1984.

These volumes will also be updated on a regular ba sis, some annually and others more frequently

The idea behind the guides is to help Computerworld readers make informed purchasing decisions about the mind-boggling ar-ray of computer and computer-related products in the marketplace today. One way of doing this is to compile a comprehensive reference manual to vendors and their products that enables readers to obtain a quick, capsul-ized view of the products and vendors to be found in

the dynamic computer in-

dustry Bacausa each volume of the Buyer's Guide series is limited to a specific product category readers can conveniently look up information without having to plow ries In addition, the guides will contain a variety of indices which make the process

And, unlike other guides, the Computerworld Buyer's Guide series also has a special magazine section at the which features articles by experts on a variety of technoogical and industry issues

related to the specific topic of the guide. The magazine is designed to give readers a perspective on the current and future state of the market for specific products and the vendors of those products, profile state-of-the-art tech nologies to give a view of what directions products are heading in the future and to provide a new way of think-ing about information pro-

cessing The Buyer's Guide series is another service Computer world offers to its readers as part of their subscription.

Currently, the guides will be sent to our more than

Compiling these Buyer's Guides is a complicated process. To achieve this, we have enlisted the services of International Data Corp. a well-known computer industry market research firm. To capture the data needed for tablished the Enterprise File a data base containing information on the companies that produce or provide com puter-related products and

services. The project was started in April 1982 and is a comple-ment to IDC's Data File, a comprehensive data base of

end-user facilities Information for the Enterprise File is gathered and up-dated regularly by IDC through printed question-naires and telephone sur-veys. To date, the file has records on nearly 12,000 companies and is expects to have 35,000 to 40,000 product entries for inclusion in the file in the near future.

Marci Fremental

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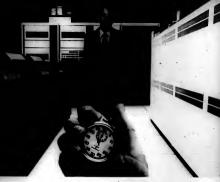
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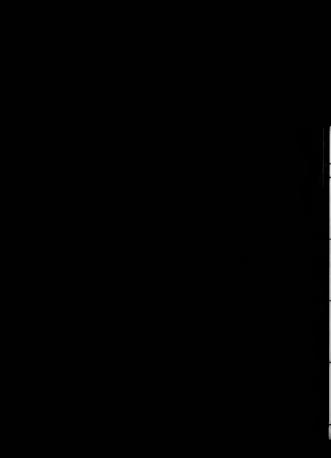
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Magazine





Giving Old Strength

New Weight By Frederic G. Withinston Are mainframes obsolete? Nev er! Specialized modules are breathing new life into the mar-ket for high-end systems.

The Personal Computer - Dilemma or Opportunity?

By Robert Freeman DP managers view the pers Finding computer as a threat. Users think they are great. Who's right? How will the differences Balance in The Mini Market

By Robert W. Hauserman The 32-bit superminicomputer will be the traditional mini by the end of the decade. But the 16-bit mini still has a lot of life.

Mainframes Ry R. Rembert Aranda 19-

The Explosion Continues By Everett T. Meserve

No longer a stand-alone system, the personal computer is quick ecoming an integrated workstation.

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By Marcia Blumentbal Gene Amdahl has a new con-cept for fault-tolerant systems and is putting that idea to work at his second start-up firm, Trilogy Systems Corp.

Care of The System?

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of opinion be resolved?

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It's time to take a fresh look at what personal computers can The and cannot do.

> Fault Tolerance **Knocking Out** Downtime By Omri Sertin

An overview of the major fault tolerant system vendors an their products.

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Planning -Insuring Against The Unthinkable

By Gary Tarkington/Walter Ulrich New technology is making the need for disaster recovery plans even more critical.

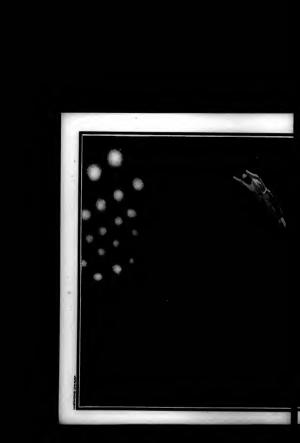
Micro Parade By Estber Dyson Personal computers are gaining new capabilities. A close-up of

three major systems.

Technology Architecture Keeping the Future

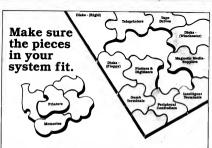
In Perspective

By G. Michael Ashmore
A planning methodology for integrating new technology into the corporate information processing environment.



LADIES & GENTLEMEN...

The computer industry is vibrant and flourisbing and shows no signs of slowing down. Ecoluting technology constantity provides new applications for computer special computers of the polication of the stories of the stories of the constitution of the stories of the cust the latest technological developments and industry trends in the three major bardware sectors — mainframes, minicomputers and microcomputers and microcomputers.



The Computerworld Buyer's Guide to Terminals & Peripherals puts it all together for you.

Precing together the right elements to build and complete a system for your organization is a complicated and time-consuming process. The con-stant flow of new products and ragid-stant flow of new products and ragid-real challenge to those involved in planning and purchasing. The Com-puter useful Buyer's Guide to Term-nolis & Periphroria prostees also not be precipitated to the suffernity of the suffernity of the product of the suffernity of the market the suffernity of the product of the suffernity of the

The Computerworld Buyer's Guide to Terminais & Peripherais is the second in our buyer's guide series and provides detailed, all-inclusive listings and in-depth purchase deci-

sion information that DP profession-als need as this market continues to grow. Listings are divided into two sections: complete product listings and vesdor profiles. Product listings include name and model number, op-resting section. include name and model number, op-erating system environment, number of installations, delivery and price data, etc. Vendor, profiles include company name, address, contact in-formation, primary markets served and more. Tab dividers separate ench category and cross references add to

Buyers will refer to Computerworld Buyer's Guide to Terminals & Peri-pherals again and again for vital pur-chasing information. And advertisers

will find this guide a powerful vehicle for jelling their story to Computer-uorld subscribers at that crucial mo-ment when they are actively seeking vendors.

The issue date for the Computer world Buyer's Guides to Terminols & Peripherals is October 5.

& Peripherals is Detober 5.

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Charles S. L. Gardine, C. Gardine, C



needed Number Crunching. There continue to be problems that require more computing power than any supermini can deliver (the Nation-Weather Service, for instance wants supercomputers with 1,000 times the power currently availahle). Supercomputers will remain expensive so they must be shared. They also have I/O and file processing needs. They are therefore specialized versions of main

The latest personal computer and superminis have exhibited amazing price/performance characteristics and promise to get bet ter Because most mainframer of fer less computing performance ner dollar than these units, some per donar man mese units, some people conclude mainframes are becoming obsolete. This is a myth There are at least three major information processing functions main francisco processing tork from many indefinitely

Ratch Production. High volume, periodic batch applications were the first uses for business computers, and they will continue to exist. Payrolls must be pre pared periodically for thousands of employees; invoices must be prepared for thousands (even millions) of customers: welfare checks must be prepared for

millions of tecipients The systems needed for these tasks are more mechanical, than electronic multiple high-speed printers forms of disks and tapes and clusters of data entry terminals must

be kept humming The control computers re-quired must emphasize device control, interrupt structures and complex control software. These add to system cost and overhead without contributing to computing speed, so batch production main frames can be expected to have relatively low computing speed per dollar — but will always be

By Frederic G. Withington

frames. However, they are becom frames. However, they are occour-ing modular. Increasingly common are specialized vector or area processor modules (whose com puting performance per dollar is far beyond that of supermines only for limited applica tion) which are connected to mod

est mainframes.

Data Base Management. Some data bases need to be managed centrally, because updates may come from many points in the net work. Methods exist to synchronize distributed conies of data bases, but so far users have gener ally judged them impractical Systems oriented to day base

management have some of the characteristics of batch systems (complex device-control function), but also require a tremendous amount of power to interpret es, process indices, unblock data and so on. The recent proliferation of per

sonal computers and superminis has fostered the growth of data base-oriented applications, and therefore of central mainframes with ever-increasing power to manage them. Growth will continue, particularly as text, image and digitized voice information begins to be added to data bases.

The mainframe will live, then, The mainframe will live, then, but it cannot be expected to have market growth as dynamic as that of personal computers or super-minis. While the value of personal computer shipments is forecast to grow at a compound annual rate of 35% from 1981 to 1986 and the value of minicomputer shipments will grow at 20%, the compound annual dollar value growth of mainframes will be only 7%.

Recognizing this sluggish dollar value growth in mainframe ship ments, mainframers are becoming fast response for limited purposes

ments, maintramers are becoming increasingly active in the low-end system market.

One reason for this slow growth is the declining cost of electronic components; as a result of this, mainframe power will be met at relatively little increase in main-

ame price.

A second and more imporant

market limitation is "site sames tion" a mainframe is already in place at almost every site that will have one in 1986 Therefore, growth can only be through uneradine.

This site citiention has also tended to freeze the competitive nattern. Most potential users of new mainframes have already had earlier models for some time and have invested in programs for them. These programs are manufacturer specific, so the user must undergo a conversion to switch manufacturers. History shows that his happens only rarely. The incumbent manufacturer has a strong advantage when the user wants to change mainframes. IBM. Sperry Corp., Honeywell, Inc. and But roughs Corp. know this well and

tomer bases will be slow Evolving technology may beg to melt the frozen competitive picture. Mainframes are becoming modular. Front end commi tions processors have long been sold by specialized manufacturers to users of other manufacturers

have moved to exploit their ad-

mainframer But if bistory is a guide, the frame manufacturers will re-

tain a substantial share of the market, but some innovative new com panies are likely to capture a substantial share of the new man

ket for specialized modules. Other classes of modules are evolving that could be the province of specialists. They inch Data Base Processors: These ocessors will be of many types. ranging from data basé manage nt systems offering extre

(such as for airline reservation sys-tems) to specialized text and graphic file servers designed for information retrieval and support of office information processing Improvements expected in mag netic and optical disks will en-hance the attractiveness of these office file servers. Britton-Lee, Inc. and International Computers, Ltd. are already active in the market.

Expert Systems. Also called Expert Systems. Also called knowledge-based systems, these are designed to help users in spe-cific professional categories (such as financial analysis and medical diagnosis) to define problems, learn methods of finding soit and then apply the solution

Processing software and data bases for expert systems contain the experience and knowledge of enecialists in the field Marking designs for expert systems may di verse from those for conventional computers, because they must of ten manipulate concepts and sym-bols rather than numbers, process relationships rather than s tial computational steps and have very large memories available. They may therefore take the form of specialized, time-shared modof specialized, time-snared mod-ules accessed through general-pur-pose mainframes. Xerox Corp. and tages so any erosion of their cusembolics. Inc. offer lier language rocessors for research in expert

> Large Scale Simulators. Today's supercomputers are often used to simulate the behavior of nuclear reactors and other large scale complex systems. It is possible that very large arrays of microcomput-ers might be of use to form models of such systems, improving the

Clearly there is room for manu-facturers of specialized modules in each of these market areas. These modules can be attached to future modules can be attached to future speneral-purpose mainframes of whatever design, either through a channel, bus of local-area network hookup, Equally clearly, the main-frame mainfeaturers are aware of frame than the control of the company of the

Withington is a vice-president at Aribur D. Little, Inc. in Cam-bridge, Mass. Withington also di-rects the firm's annual series of in-formation processing industry

Finding Balance In The Mini Market

And the Williams

Although some analysts have been accused of prematurely predicting the demise of the conventional 16-bit minicomputer for several years, recent trends suggest the 32-bit supermini will virtually become the "traditional" mini-

computer by the late 1980s.

By the middle of 1982 there
were more than 55 superminia
available on the market from 15
vendors. With a predicted growth
rate of approximately 56% each
year through 1985, the 32-bit supermini now represents the fastest
growing segment of a thriving
minicromputer market.

According to International Data Corp. projections, superminis will comprise about 41.4% of total unit minicomputer shipments by 1986, up from 38.6% of the units ship-

ments tast year.

Originally directed at scientific number-crunching and real-time control applications; superminis continue to gain acceptance in conventional data processing applications as well, with many analysis and interest mentions and the companion of t

sector will grow by as much as 40% each year.

The supermini features a longer word length, which leads to increased throughput, more precise computations and easier program development.

development. The advantages of superminisover the traditional 16 bit machineter than 16 bit

the large physical main storage capacities that characterize most of the superminis.

A single 32-bit word provides enough precision to satisfy the de-

cial computations, and most superminis are capable of processing double-precision (64-bb) operands. The common 16-bit minicomputer word length, however, is too short to provide the required precision in many applications, necessitating the use of time-consuming multiple word operations. Finally, a 32-bit supermini nonmally transfers twice as much inmally transfers twice as much in-

formation to or from main storage during each cycle as a 16-bit mini. tage is further enhanced in many cases through the use of storage interleaving, cache memories and other power-boosting features: Because it is based on minicom-

other power boosting features:
Because it is based on minicomputer architecture, the supermini
is more conductive to a multiuser,
interactive processing environment than many mainframes arc.
They are in most cases easier to
use, usually do not require special
environmental conditions and
generally require less power.
Superminis are being marketed

environmental conditions and generally require less power. Superminis are being markeced for — and finding widespread user acceptance in — a broad spectrum of applications. Applications for superminis now fall into three broad categories scientific/technical, commercial and combinations.

biblio, permining effective use of This inherent performance advanced, commercial and combinations calcomments. Selected 32-Bit Minicomputer Systems

Manufacturer and Model	Apolio Computer, Inc. DN420, DN600	Bata General Corp. MV/Family	Digital Equipment Corp. VAX-11	Formation, inc. 4000
Workstations Supported	200	64 to 192	24 to 112	. 96
Memory Capacity (Bytes)	512K to 3.5M	1M to 16M	1M to 12M	256K to 8M
Virtual Memory	Standard .	Standard ·	Standard	Standard
Maximum Program Size (Bytes)	16M	512M	2G	16M
Parity Checking	N/A	No	No	- Standard
No. of Instructions	65	467	244 ·	IBM/370 Inst. Set
Cache Memory (Bytes)	Optional 4K	16K	8K (11/780)	No *
Maximum Communications Lines	3 .	192 .	112	100
Price of CPU, Power Supply, Cabinet & Mininum Memory	\$28,900	\$56,300 to \$211,000	\$48,900 to \$495,000	\$50,300
Date of First Delivery	3/81	10/90	2/78	8/80
No. Installed to Date	500	300	Over 2000	50
Applications Softwara Availability		Present, Trandview, Manap and CEO Electronic Office	Primarily Third- Party Software	IBM/370 Software- Compatible

of the two Commercial applications incommercial applications in-clude distributed processing net-works, off loading of applications from large batch-oriented data centers and installations where large numbers of users must be supported simultaneously. In mixed technical and commercial environments the superminis are environments the superminis are used for a wide range of interactive applications as well as for opera-tions research functions that can help an organization improve its

operations, allocate its resources and sharpen its decisions. While initially aimed at the sci-entific and technical markets, current trends indicate the biggest push by supermini vendors during

this decade will be in the area of business data processing, threaten-ing the supremacy of the Digital ing the supremacy of the Digital Equipment Corp. 16-bit PDP:1B and Data -General Corp. Eclipse families. A manifestation of this trend is that DEC's high-end 16-bit

workhorse, the PDP-11/70, is no looper actively marketed Vendors are becoming increas munity is interested in machines that are cheaper than mainframes, yet at the same time offer large in-

creases in processing power.

The shift away from the scientific and technical markets toward the commercial sector is appare superminis are price/performan competitive with small main-

frames. They allow users previous ly limited to time-sharing environ ly limited to time-sharing environ-ments (because of a big mainframe price-tag) to afford an in-house system and they are more agree-able to multiuser and interactive

system and they are more agree-sible to multisuser and interactive conveniences.

It is a substitution of this trend is that in the last 15 months of so, the major supermini vendors have generally extended their product lines downward, clearly moving into the domain of the high end into the domain of the high end into the domain of the high end of the Edipac MV/8000 in 1900, of the Edipac MV/8000 in 1900, DE followed up with the MV/600 at the end of 1981, and the MV 4000 at the end of 1982. DEC followed a similar law DEC followed a similar law for the this into the this into the this into the thin the MV AV.

Gould, Inc. Concept/32	Honeywell, Inc. DPS 6	NCR Corp. I-9000	Perkin- Elmer Corp. 3200	Prime Computer, Inc. 50 Series	Wang Laboratories, Inc. VS Series
96	64 to 112	Over 20	32 to 128	32 to 128	48 to 128
256K to 16M	1M to 16M	1M to 4M	512K to 16M	512K to 8M	1M to 8M
N/A	No	Standard	No	Standard	Standard
16M	-	N/A	16M	32M	1M
Standard	Standard	Standard	No	Standard	Standard
214 (meximum)	237		206 Standard, 52 Optional	Over 500	180
Standard 64K/128K	8K .	- '	8K	Standard 32K	32K
. 64	112	20	63	128	Application Dependent
\$33,000 to \$330,000	\$110,000 to \$130,000	\$52,100	\$42,000 to \$185,000	\$48,500 to \$295,000	\$73,000
10/78	1981	- 6/81	1981	1979	12/80
2,270	220		1,433	4,610	1
Primarily Development Tools	Office Automation, Business . System, Manufacturing	Several Packages for Banking, Education, Hospitals and	Technical In Nature; Available Through Users' Groups	CAD/CAM, Management, Third-Party Software.	Third- Party Support

×

11/780 in 1977, with the 11/750 in 1980 and the 11/730 in 1982, which presents a formidable challenge to both the high-end of the 16-bit mins line and the low-end mainforms.

maintraines.

Prime Cola presentation is secured to a prime cola presentation to a choice a range of basiness and sei-cutification oriented, multisuer, in eteractive systems that, similarly to DECs and DOS lines, present sign unificant competition to high-end minimal onlew ord uninfarance ventiles. The competition of high-end minimal college and maintraines when the competition on the control of the competition of the competiti

"Similar discharactions, processing and remote facilities of larger organization, particularly offices staffed with 10 to 100 people. The higher of 90 and V9 to 100 people. The higher of V9 90 and V9 DPF and office automation are quite ments of large corporations.

Despite the move into the lowend 32-bit minicomputer sector, which is suitable for commercial applications, vendors are also foring a head with high-end an nouncements. DG recently announced its MV/10000 and it is unrooted that DEC has a VAX.11/ 790 in the wings, which will artempt to exode DG's current protinent position in this marker niche. With a base configuration of IM

with a see consignation or any top of memory (expandiable to 18th bytes), a 147th byte disk, upon drive, 15-line multiplexors, console, AGS 70 operating system it. as much as 18.50 bytes of disk sorage, 256 simultaneous processes, 196 users and a list price of \$204,100, the DG MV/10000 is clearly in the ballparic for a run at the low- and mid-range user main-frame. According to DGS bench-frame. According to DGS bench-frame.

mark for this product, it was two times as fast as the IBM 4341 Model Group 12 at one-third the price. DG officials hope to carve a per-

DG officials hope to carve a perpension with the MV/ 10000, especially in the technical markets, which suggests that, despite their courting of the commercial sectors, supermini vendors are not prepared to abandon the technical market to the conventional mainframe.

The major supermini vendors, such as Formation, Inc., with their established IBM compatible F4000 supermini line, are bracing for an assault on the low-end mainframe market in the same way as the MV 4000 and VAX-11/730 have chipped away at the high-end 16-bit review.

Perhaps the two most recognizable trends within the superminiarca lie in their cost effectiveness and software availability. Because the commercial segment is cuetorized to the commercial segment is cuepresser as the commercial segment is cuetorized to the commercial segment is superminipated to the comtained to the commercial segment is better than any other area of the 32torized to the commercial segment is the market, superminipated to the comtact of the commercial segment is a processor. Frime all readers of the relatively storing complement of

business-oriented software.

The availability of 32-bit software, however, will expand slowly
because of the enormous investment needed by vendors to produce such programs and the time it
takes to develop 32-bit software
packages. Much of the software
variable today is based on the 16bit architecture and therefore cantous led full advantage of the 32-bit on take full advantage of the 32-bit.

computer's processing power. The slow rate of software development is the reason the predicted demise of the 16-bit minicomputer is far from certain. If the fate of the PDP-11 family represents that of all 16-bit minis, then the minicomputer is, at least for the present, alive and well. It will take three to five years before there is a substantal amount of 32-bit software on

Although DEC has recently

dropped the high-end systems like the PDP-11/70 and 11/34, they seem to have concentrated on the lower end of the series with introductions like the Micro/PDP-11. With more software available for the PDP-11 line than any other system and more than 490 companies and more than 490 companies could be the series of the series cylinpmen for the series, and the cylinpmen for the series, and the serveral more was.

Finally, the end of the traditional 16-bit mini cannot happen until the price of 32-bit systems descend from their original and lofty \$150,000-plus heights. However, during the past several months, this event has dramatically occurred.

Today, several systems, including the Kings and W/4000 with his
byte of main memory and the VAX.
If the control of the AX
is the precised with a part
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sign, including circuit beautiful tests and the cost of cooling, achieves, power supplies and so on. With the 32-bit superminis descending in price so demantically, how low can price performance of the cost of

Robert W Hauserman is an associate editor for Datapro Research Corp.'s "Datapro Reports on Minicomputers," in Deiran,

The Explosion Continues

By France T Maraga



is moving towards maturity and the minicomputer is approaching middle-aged status, the microcomputer is still a mere flowering youth. Despite its youthful and glamo

Despite its youthful and glamorous position in the marketpines; it is becoming evident that the mitime is becoming evident that the mifect a complication which the mifect a complication of the mifect a complication of the mifect a complication of the mistream of the mistream of the migraph of the migraph of the midistant future, the growth rate of
the microcomputer market will be
gin to level off. A tasse of this type
of competitive stantation occurred to

systems slowed, partially as a result of a poor economy, resulting in disastrous results for at least six firms in this market.

As industry participants — hare were and software suppliers, software developers, investors, resell ers and service providers — loo toward that eventually, it is criticate to consider and understand one of the key industry trends that is redefining the competitive environment — the metamorphosis from ment — the metamorphosis from and alone no interest of encouraged and the competitive development.

In the summer of 1977, Rads Shack, Commodore Business Machines, Inc. and Appie Computer Inc. almost simultaneously ar nounced products that distinguished themselves from many of and the integration of subsystems into one convenient unit. The mucrocomputer market took off and in the five years that followed another 100 to 150 microcomputer suppliers joined in to provide per sonal computing to business professionals technical professionals educators, small business manae-

T be integrated personal workstation marketplace today is an embryonic business that will require another four to five vears to reach its growth stage, but thereafter will grow dramatically.

ers and con

The major focus of these suppliers has been to broaden the pene computers by introducing icts with lower cost and ex panded capabilities and by making cation networks, as well as to other available the all-important applica tions software that allows nor puter professionals to justify and use personal computers. Since the summer of 1977 the keys to success have shifted from availability and hardware performance to man ket segmentation, application solutions and distribe

The spread of micros to an esti-mated 800,000 business users has combined with other separate trends in office automation and integrated data communications to determine the foundation for the industry's growth for the next five

During this upcoming period the competitive battle will continue to focus on the broad and di verse population of professional business users as they are drawn encouraged, pushed and shoved toward the use of information technology to improve their pro fessional productivity and to en-

Tangible evidence of this com petitive hattle centers on the tran-

caron of missions are to be dividual, dedicated, stand-aione professional tools to system-inte grated personal workstations The major market for today's

desktop micros consist of the husi ness and technical professionals working in large comorate organi zations (who bought some 200 000 units in 1987). Many of these one porate professionals want to com municate via electronic mail and text communications network obtain data from corporate data bases for local manipulation and secure information from public in

While personal computers can provide this capability, they were sioned primarily to openie as stand-alone, dedicated products The integrated personal work tion. however, is designed with significant communications caps biliry (but can also function as a stand-alone). Integrated personal workstations can be linked to one another with local-area communi

stems using telecommunications cilities. They are equipped with soft ware that combines office automa tion, communication, decision and management aids with information processing functions. Eventually they will handle graphics and oice media a well as data and text The metamorphosis of today's stand alone personal computer into tomorrow's integrated person al workstation is being aided by re cent software announcements and joint wanture arrangements which facilitate the linking of this limited

surces and information wealth of the corporate mainframe Some examples of this integration trend are Peachtree Software Inc.'s Executive Peachtree main frame-micro-link products an-nounced last year; Tandy Corn.'s support of Datapoint Corp.'s Arc net local area network scheme; Vi sicorp's and Informatics General Corp.'s announcement to link Vi siAnswer with Informatics An swer/DB software; and Cutlinet

tand-alone device to the rich re

Software Inc's introduction of its Information Database which will tink its data base system with the IBM Personal Computer and even-tually with Apple Computer, Inc.'s

The significance of these early products linking- mainframes to micros is to break the logism created by an inability of personal computers to communicate with a cenrelized processor in a compatible

These moves are the first imple mentation of opening the door be tween local stand-alone 'comput ing capabilities and centralized information resources. This strateey will continue to be enhanced regularly during the next five

the integrated personal worksta-tion as a technological offshoot of stand alooe microcomputers, ex tended application software and communications capability will eventually differentiate them.

Inadequate Integrated applica tions software, limited communi cations infrastructures and evolv-ing system architecture will ing system arcbitecture will constrain the early growth of inte-grated personal workstations for a few years. However, by 1990 work-stations will be broadly used. One of the major changes also

One of the major changes also necessary for integrating the per-sonal computer into the corporate information processing structure is the transformation of the main-frame architecture into compartmentalized, specialized processors. Such processors include a data base processor, communications processor and file server protions processor and file server pro-cessor, all controlled by the super-visory processor. These changes will provide the required through-put demanded by personal work-station users because it parcels out the jobs traditionally done by one processign into several discrete pro-

The changing complexion of the microcomputer market also creates important new keys to business success for vendors as they offer products that provide

stand-alone performance vs. net-work operation individual vs. integrated software and product vs. system marketing.

In an attempt to position them selves for success in the frothy in-tegrated personal workstation environment many vendors are increasingly entering into a variety of joint ventures loint ventures help spread the risk for vendors These arrangements buy time and allow vendors to keep their tech nology current in a marketpiace that is running at five times the speed of the the historic computer

What does this scenario of inustry evolution forecast for mardustry evolution forecast for mar-ket growth? Today's original-pur-chase microcomputer hardware and software market in the U.S. is approximately \$2.9 billion. By 1987 it is expected to be near \$10

As integrated personal workers tions enter their growth phase (1985-1987) they will strongly compete with stand-alone desistop microcomputers. The result will

microcomputers. The result will be a maturing of the stand-alone microcomputer market, a market which will be only slightly larger in the early 1990s than it will be in the fate 1980s.

The integrated personal work station marketplace today is an em station marketplace today is an em-bryonic business that will require another four to five years to reach its growth stage, but therefare will grow dramatically, reaching 35 bil-lion by 1987 and approximately \$10 billion by 1992. At that point the size of the stand alone micro-computer and integrated vporksra-tion markets will be equal.

tion markets will be equal. This growth will require that files of data, text and graphics ma-terial be available to untrained users in a convenient manner; that communications facilities with an propriate bandwidth exist not only in the office but also between the office and other corporate ner works public information and central processing points; and that a wide variety of easy-to-use integrated software packages for manipulating data, text, graphics and voice be available. Also, prices

must decline, the present embry-onic products at \$10,000 should cost no more than \$5,000 and less capable versions may very well cost in the \$1,000 to \$3,000 range The marketplace for future pro-fessional micros and integrated personal workstations is critical to the futures of several groups of

competitors. Companies seeking new business growth see the large potential user population - mor than seven million managers and administrators in U.S. organiza tions — as an opportunity to pro-vide new technology solutions for increasing professional productivi-

ty and responsiveness Desktop microcomputer dors, who already have many busi-ness customers, see the integrated personal workstations as an exten-

personal workstations as an exten-sion of their own current offerings in the marketplace. Terminal, computer and office product suppliers experiencing di-minished business growth die inished business growth die to industry maturity see the potential for renewed die expanded sales. Each of these groups has impor-tant strategic reasons (such as in-turnity of the properties of the production of the intercence) to re-participate, in the intercence in participate in the integrated per-sonal workstation business. The rewards are enticing and the competition will be intense.

As has been true from the begi

ning in the evolving microcomput-er industry, the keys to success will continue to change. Opportunities will be provided for new competitors to secure positions or for evisi

ing competitors to become si ing competitors to become stron-ger. Competitors which can provide (or be part of) an integrat-ed capability or offering based on information and communications capability will have a significant

Suppliers who can convey or strate reliability, on-going

Suppliers who can convey or demonstrate reliability, on going support and investment protection will have an advantage. Ad-vantages will also accrue to those who can reach and support widely dispersed us-

support and investment protection will have an advantage. Advantages will also accrue to those who can reach and support widely dispersed users. Participants who have a current understanding of user applications, work requirements and environment, as well as how procurement decisions are made, will have a strong competi-

ion piccus...

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the advantage
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technology, products and
systems orientation to proude in
signated personal workstations,
but these may not be enough.

For many the critical attribute
the endurance—the ability to

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soft and the system as chitecture, communications infra-structure and standards develop— that will move the marketplace to-ward long-term growth.u



CW Buyer's Guide Interviews

Gene Amdahl

By Marcia Blumenthal

When Gene Amdabl left Amdabl Corp. in 1979 starting another computer company was the last thing on his mind. Or so be said. A year later, howevtoing on his mina. Or so he said. A year iater, nowev-er, he resigned as chairman emeritus from Amdahl, the company he founded in 1970, to form Trilogy Sys-

tenst Cop-505-4poken and dignified, Amelaki projects the im-age of an elder instantami de computer industry, a sign of an elder instantami con-bility of the computer industry, a behavior of commercial computing, a lauder in the computer industry he has witnessed the unfeiding of the basicry of commercial computing, an experience the basicry of commercial computing, an experience A badding phylicits in a graduate program at the full of the computer in the computer insulvers them there was a better usey to compute numbers them with a calculation and aller into I. The "force mouse-with a calculation and aller into I. The "force mouse-

with a catching and shar rule. Local very mouse-trap" emerged as the Wisconsin Integrally Synchro-nized Computer, now fondly known as the Wisc. Am-dahl describes it as a one-ton version of today's band-beld calculators. The system bad a main mem-

ory of 1,000 words, an overlappipeline which al-currently and an input long for dependent on currently and an input long for dependent on an the first channel that occurred in computers, to appear as an educational long for training eagle where it is a real field conflict containing eagle where it is a real field conflict containing and the containing and the containing and and sent in a real field conflict containing and feeling of general in a Annaland. Smattered with builties from the containing which contains a surveying feeling of period in the Annaland. Smattered with builties from the containing which contains a surveying and sent and the containing and the containing and the state of the containing and the containing and the state of the containing and the state of the containing about the topic of the containing about the topic of the containing about the topic of the containing and the topic of the containing about the topic of the containing and the topic of the containing about the topic of the containing and the containing about the topic of the containing about the containing and the containing an

Sodiumg visitors us original acangularity is bistory.

By the time the Wisc was built in 1954, Amdabl bad already been working at IBM for two years. During his career at IBM medabl was the project engineer and chief designer of the IBM 704 and later was



Most fault-tolerant com-puters consist of two com-puters—one asks the other puters—one asks the other if it feels sick. The Trilogy firm introduced a system design is a single system.





There are a lot of ner things going on today. But it's curious bow these new ideas consist of reworking

m charge of developing the arch tecture for the IBM 360 After a lone career at IBM Am. dald started Amdahl Corn. the first

aabi started Amdabi Corp., the first manufacturer of IBM plug-com-batible mainframer in 1970 ttote maingrames, in 1970 Trilogy is Amdabl's second start up computer venture Initial funding for the corporation was funding for the corporation was \$160 million nathered from many sources, including a research and notes, including a research and a \$14 million investment by the French corporation CII Honeywell Bull and grants from the Irish goverument for the nurbose of setting

un manufacturing facilities in toat country.

Trilogy is still raising capital
and recently agreed to allow Sperry Cort. 15% ownership in the firm in exchange for an investment of \$42 million Joining bim in the venture is his son, Carlion, who was a principal

that country

in Manuscon Computer Sustant cently Amdabl met with Mar cia Blumenthal, editor of Compu terworld Buyer's Guides, to share some of his experiences in the com-

puter industry and to discuss the it is the idea behind the

new Tritogy system?
Basically our mission is to develop new semiconductor technol ogy, which will be useful for many things besides computers. About 75% of the cost of our program is allocated to chip development and automated design techniques. The other 25% will go towards the computer system

Who designed the chip that will be used in the system? Carl and I worked it out our-

ure and relay signals to another set selves. It's a new way of approach ine redundancy. Chins used in oth er computer systems can't have any defects. Ours will permit many de fects. That means chips that would have otherwise been rejects are considered good. The chip has active redundancy which will toler-ate new faults even after the computer system is shipped. The

greater percentage of the faults will never be noticed by anyone This improves reliability and the mean time between ranges win be measured in years rather than number. The reliability improve ment allows a high yield on chin viuction and therefore brings the cost of a system done

Are you using very large-scale integration (VLS); with these The physical size of the chin it

self is very large, about 2.5 inches square. Using this technology 40 wafers can be used instead of a 000 change It has an extremely high less el of integration - higher than el of integration — ingret VISt — and it is bigger than a 256K bit chip. IBM takes a ceram motherboard and puts a lot of little chips on top of the chip connec tion Our one big chip holds about two-thirds of the circuitry of one of

19M's thermosonduction mad So you are aiming to produce a very bigb-performance, IBM plug-compatible mainframe? An IBM-compatible system is

..l.

able to run programming written for IBM computers. Our system can do that and is able to connect to peripherals that can connect to IBM computers. But the Trilogy system, when i

troduced in 1985, will be a contin uously operating, large, fault-toler-ant computer. Most fault-tolerant systems consist of two com - one asks the other one if it feels sick. Our system is a single syste that doesn't get sick; it performs in spite of being sick and performs without fault. This is because spe-cial circuits on the chip detect fail-

of circuits on the chin The system is a very fast on-lit general purpose computer sy so anyone with large on-line appli cations is a potential user

Why baven't there been other very large fault-tolerant systems built to date?

systems are really two processors They depend on a job being neatly partitioned. In very large applica tions it is difficult to partition jobs so they can be put on two separate computers For example, the AT&T comput.

center in New Jersey may have 14 high-end systems: a couple of Trilney systems will be able to replace all of the

Do you fear IBM comine un with such a system before you in-troduce the Trilogy system? It's difficult to decide how to

approach the solution. We found an easy way to do it, but it wasn't easy finding the solution. 1BM would like to do it, but I don't think they will There wasn't really anything new we had to do with the system. The technology and time system. The technology and ideas have been around along a long time, but have never been thought of in those combinations hefore

What is the market potential for these large fault-tolerant sys-Well, a study done for us in 1980

by International Data Corporation projected that in 1985 IBM would ship 2,000 high-end units worldide. At the end of 1982, IBM shipments were running 50% ahead of IDC projections.

Basically a large portion of IBM 3081 users want a larger machine; that is why the firm introduced a system with two processors. John Doel. IBM's chairman, estimates computing power in mips [mil lions of instructions per second) at user sites is growing 50% annually. This is because almost everything being done in the corporation to being done in the corporation to-day is in someway involved with computing. The proliferation of micros will increase the need for large computers. If a company doesn't keep up, it will not be able to be competitive.

And today, companies are run

ning their businesses as tight as possible because of the economy, so managers need up to date infor-mation about what is going on in

......

door

Right now our competition is running at about 14 [mips]; we ex-pect to come out with a 32-mips machine. There will be very many 3081s that we replace

When will your system debut?
We will ship our first one for testing in very early 1985. Right now we are negotiating with a large insurance firm to be the test

What will your pricing be?
Our price for a 32-mips machine will probably be in the \$5 million range, but we haven't decided that finally yet ... However, we think we can manufacture our system at one-third less per mips than IBM

does.
[Trilogy projections show IBM's price per mips in 1985 will be \$245,000 for a 25-mips machine. The firm estimates IBM's cost per mips at 15% of the list price of the system divided by the number of

Historically other IBM compati bles price their systems at 40% price/performance over IBM sysprice/performance over 10M sys-tems. Trilogy doesn't have to do any better than that. We may be able to ask a premium, but with a relatively small sales force, we may have to temper our ambitions on orice

This is your second time

This is your second time around starting a compute firm. What itsoms how you learned! Not enough Keeping, control over the ownership of the company is important because it determines whether you can implement the programs you think are best for the company. It wanted Andahl to have the right to manufacture its manufacture is so now they can't determine the cost of the product. I you can't determine the cost of the product. I you can't set upon grange plans. you can't set up long range plans for the company. You have loss

one of the basic elements of your one of the basic elements or your strategy, which is getting the cost structure that will be appropriate for some time in the future In raising the initial \$160 mil lion for the company, the firm's

ership of the firm. After the R&D limited partnership is dissolved. the owners will retain a 50% int est in the firm.

The IBM plug-compatible ma ket doesn't seem to be as excitin as it promised. What do you thin has happened in this market? I think IBM has done everything it can to make it difficult for the PCMs (plug-compatible manufac

the firm witholds informatio about its new products in a way which is both unreasonable as anticompetitive

What technologies do you find xciting today?

There are a lot of new things g There are a lot of new things go ing on, but the curious thing is how these new ideas consist of re-working of old concepts. I find the 256K memory chip very exciting Also, Cmos semiconductor technology is very interesting. Cm has low power requirements, b ry complex structures that wil make powerful personal comput ers available. Also plasma disterminals are interesting, but don't know whether this techno-ogy will be feasible unless pow requirements and cost come

It is possible for a product to have technical promise without having commercial promise.

having commercial promise.

You see new things that should replace old ways of doing things, but there is so much investment in the current technology that it never thappens. Magnetic bubble memory is an example of an exciting technology that didn't make it

the high-end product market, but what do you think about the her

nal computer explosion?

I have to admit I never though the personal computer would find a market. I didn't believe there were enough people interested in

What do you foresee bappeni

onment?
I think the expert systproach will become part of the cor porate world, particularly for plan porate world, particularly for plan-ning. Right now these systems are still not intelligent because they don't learn by themselves, but it won't take too much to get these systems to operate that way

How significant a threat do you think Japan is to the U.S. computer industry?

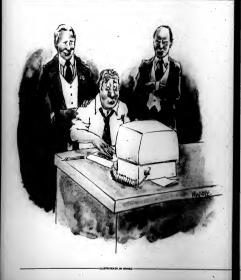
I think Japan presents very real competition to the U.S. Japanese companies have technology that exceeds what is good at IBM.

exceeds what is good at IBM.
There is a myth that Japanese
companies don't know how to create software. They know how to
[create] portity good software. Japanese firms are skilled in every areathey have to be. The Japanese are
also very active in robots and mem-

on technology Unless some the U.S. and Japan to ensure equal competition, I don't think comput-ers will principally provided by

I don't think the U.S. gov ment should intefere to help the industry, but I think it should into fere to get the Japanese to tak some of the protective measure off its marketplace or to pay som kind of penalty to make the con petitive basis equal.

ributing to this article was serworld Staff Writer, Patri-



Dilemma or **Opportunity?**

Information systems managers view personal computers with both excitement and fear. What role should these managers play in usbering these professional belpmates into the corporate mainstream?

To say that personal computers have stirred a revolution in infor-mation processing is now a well-accepted notion. The ability of these personal work machines to

accepted notion. The plainty of chalance componer productivity, especially at the managerial level, especially at the managerial level. The productivity of the productivity of the level of the productivity of the level of the

By Robert Freeman

with eight million of those installed in Forume 1000 companies. But today, personal computers are still nowetites in the corporate setting. Stary percent of all corporate today to the companies of the companies with eight million of those in

computers is likely within the next few years.

Users' attitudes and plans for personal computers seem to sup-port this expectation. In the lingus in the Information Systems Strate-ers, 'the 185 personal computer us-ers (based in large corporations) who were interviewed expressed overwhelming support. For this form of computer. Sixty percent of the users interviewed planned ad-

or commercial time-sharing com-puting solutions.

Departmental plans for personal computer purchases were even more aggressive than those of us-ers. Department heads of 50 For-tune 500 companies planned for average increases of 129% in ex-penditures for personal computer

1983. In another study of 306 large companies, overall spending for mainframe and related hardware and software was expected to increase only 8% in 1983 from 1982 spending. Spending for personal computers, however, was expected to increase by 60%. It is clear

that personal computers are slared for major growth in the corporate

From the user's point of view the personal computer is the ideal information processing resource. tasks it replaces were formerly done by hand either because an plications programs or program

Overall spend ing for mainframe and related bardware and soft ware was expected to increase only 8% in 1983 from 1982 spending. Spending for personal computers. bowever, was expected to increase by 60%

mers were not available or because the wait was too long. This study revealed that programming delays of four to five months were common and that two-year waits were not unheard of

Users perceive the personal computer to be cost-effective — even more so as hardware costs fall while programming costs contin to rise. Perhaps more importantly. users feel they have better control over their computing "destiny"

In selecting computing alterna-tes — personal computers, commercial time sharing and in-house information system resources users judged ease of use and time to get up and running (or imple mentation speed) to be the key factors in their choice of informa on processing resources. Response time, cost and control fac-

selection process. Although commercial time sharing compared well on the first two bases, its considerably higher operating costs, especially at the department level, are a major drawback. Like time-sharing, most personal computer purchase plans are made at this level, with lower

cost being a bowerful incentive for increasing personal computer use. However, when it comes to peronal computers. MIS department objectives differ from those of personal computer users. The tasks for which the MIS department must plan exceed the capabilities of micros, but the immediate users do not care about the big picture

personal ---Input's present identifier force broad objectives for MIS manage ment in the near-to-midterm future and several tasks for realizing each of those objectives. The objectives are improving MIS planning in creasing MIS cost-effectiveness extending computing power

throughout the organization and increasing MIS contribution to conpomte mode Capacity planning, life-cycle

nlanning, and resource optimizaion exemplify the tasks necessary for improving overall MIS plan ning. Increasing cost-effective ness, the second objective, de mands such requirements as

effective charge-back systems and improved hardware efficiency and programmer productivity But personal computers non two major dilemmas for MIS ma

agers and strategies. First, conflicts can arise within any of the four objectives. In improved planning, for example, personal computers could either displace exist formation systems or lead to an increased demand for them - depending on how well they are integrated into the overall corpo-

rate information system. Personal computer applications could skim off in-house time-sharing work, leaving high overhead in the MIS department. Resulting MIS cutbacks might leave personal computer users unsupported. Fu

ture exchanges between MIS and micro users would then be even less satisfactory from the user, MIS or comparate standpoint Another survey of 586 MIS de

tments confirmed this notion of uncertainty: future planning and

mentioned problem areas for in formation system management Significantly, the importance of this problem increased with com

page sixe The second major dilemma is hat oersonal computer usage may lead to conflicts between MIS ob sectives. For example, personal computers certainly contribute to they not want the convenience of a the goal of extending computing tion. Users have access to low-cost. on-line processing for transaction al and analytical requirements.

By 1990, analytical or decision support processing will have grown from 35% of all commuting up to 60%, while transaction pro-cessing will decline from 65% to 40%. The size of the pie will have grown by a factor of 10 during the period. Just as important is the enormous growth of dispersed processing, from 20% to 55% of all

To be sure, personal computing systems will not be the sole source of these two major changes in computing focus, but they will

surely stand as a major factor, the more so as hardware (especially local area networks) and software (down-loading and integration) advances continue to compound

advances continue to compound their capabilities. But, at the same time as they are extending computing capabilities, personal computers could be in-creasing overall computing costs and leading to other inefficiencies. The hardware and software purchase plans mentioned earlier in-dicate corporate, departmental and user enthusiasm for adding to the value of their systems. Yet uncon-trolled growth from these various sources could result in incompatibility among data, hardware

software Even worse is investment in vir-tually, obsolete devices or machines that are u re unsupported be vendor failure Fascination with gadgetry com monly leads users to spend more programming application night be available on

tools with tasks are com gross mismatches possible. Some managers were found performin word processing on Visicorp's Vi siCalc for example

These are just a few examples of conflicts certain to arise as personal computer growth continues.

MIS managers foresee that isolated or even widespread success with personal computers will be attributed to users or to the machines themselves wet widespread failure of personal computers is likely to he seen as an MIS failure — son

thing that should have been pre-The adoption and early imple mentation of a personal compu strategy are now necessities for large corporations and large users of computing resources. At preers receive any kind of assistance from their information systems departments. Self-teaching help from vendors and computer stores all rated higher than information systems departments as sources of assistance with personal computer

problems problems.

But the MIS department is the logical organization to direct personal computer use, especially when corporate-wide goals of coherent information systems planning and cost effectiveness are considered.

The question arises, then, as to what role MIS organizations can and should play in the personal computer revolution. Many MIS organizations are currently at cross purposes with personal computer use, which in some cases are viewed as functional competitors This is especially true for those or

into it especially true for those or-ganizations that have replaced commercial time-sharing with ex-tensive in-house networks. But from the user's perspective, control is the most highly valued feature of his personal computer, frequently the only way to escape dependence on internal MIS de-partments. tments

There are a range of possible roles forseen for the MIS organiza-tion or manager which range from

the extreme position of controller to the position of informal advisor In between are roles of specifier. coordinator and information pro-

The controller role is almost doomed from the start. In this sine ation the MIS department seeks to plan and control personal computer use throughout the organiza-tion, as if personal computers were extensions of the central informa tion systems department. Not only will usees estimated and attempt to us dermine such a role but few MIS departments have the resources or

expert :e to carry it off By acting as a specifier, MIS would define what departments may or may not do with person computers, including what hard-ware and software products to buy and the types of work to be performed. This role is already being attempted in some companies and industries, but will prove difficult to maintain in the face of the extreme dynamism in personal co puter technology, price, and appli

Input believes that the role of coordinator is appropriate for most MIS organizations. It is also the one most likely to result in a suc-cessful melding of user desires and organizational needs, while accommodating rapidly changing

This fole covers a wide range of activities. It encompasses vendor selection, establishment of hard-ware, software and communica-tions standards and organizing user groups and information ex-changes. The coordinator should work with purchasing and account work with purchasing and account ing departments to maintain bud gets and gain. volume discount and with vendors to secure mainte-nance. He should be responsible for documentation and for monit toring the success of personal computer, use and its Interestical computer use and its Integration into the organization's overall in

rmation strategy.

The role of information provid er is more passive than that of co-ordinator but he must take an ac-tive part in promoting personal computer awareness, while mak-ing no effort to control or direct eir use. At the far extreme (short of doing nothing) is the informal advisor, available if consulted but essentially passive. Given users' current resistance to depend upon MIS, this position virtually assures that MIS will be ignored or passed by in personal computer develop-

IS managers

presee that isolated or even widespread success with personal computers will be attributed to users or to the machines themselves, ver widespread failure of per-sonal computers is likely to he seen as an MIS failt something that should have

been prevented.

ment. The initial, sometimes euphoric, embasiasm for personal computer use disquises the fact that
many personal computers are now
essentially fair weather systems,
sessentially fair weather systems,
and will surely continue to ite
crease in capability and usefulness.
But they have neither been critical
by tested for many applications nor
have they stood the test of time.
Sandardazitation, for example, re
documentation and overall value
in proportion to expenses.

in proportion to expenses.

Above all, the personal con Above all, the personal computer role in supporting information systems objectives needs careful secration and planning. This is even more critical now as usage of these systems is already well under way. Well conceived, planned and implemented of personal computer surregies will go a long way to washed in human and the personal computer surregies will go a long way to washed to be a surregied to the securing computer to the future for this exciting computer to the securing computer to the s

MICROS AREN'T MAINFRAMES

By R. Rembert Aranda



Of course they're not! Yet MIS professionals persist in treating these systems like smaller versions of mainframes. It's time to take a fresh look at what these small wonders can and should do.

The long-sought-after multifunction workstation has arrived, but many office automation (OA) experts are having trouble recognizing it because it came disguised as the personal computers. The role of personal computers

The role of personal computers in OA is poorly understood primar ily because they have created new, revolutionary opportunities and a new computing culture beyond the original vision of many DP and

undeclared war has been waging for the past four years in corporate environments between DP/management information systems (MIS) "establishment" forces and the personal computer "revolutionanes."

tionares.

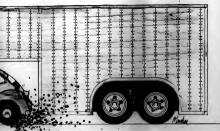
Personal computers are potentially the best development tools that DP has ever had. However, realizing that potential requires that DP/MIS management take an active role in encouraging and sup-

porting wide deployment of personal computers. This DP role needs to be oriented to support rather than to control.

needs to be oriented to support rather than to control.

DP and OA managements must begin to view the personal computer not as a toy or a threat but as a tool, and must also recognize that the end of the terminal and shared logic word processor era is at hand.

at hand.
It is also essential that DP and
OA management begin to provide
communications and on-line services to personal computer users.
The time-sharing bureaus have, on
the whole, found it easier to recognize this need and have geared to
to selze this opportunity on a larg-



er scale than have copouse and departmental DP organizations. The difficulty speciesced by The difficulty speciesced by The difficulty speciesced by the difficulty special properties of the difficulty special properties of the difficulty growing number of personal computers is on which internal DP/MS organizations are fieldly pletform for the host network services, of which internal DP/MS organizations are fieldly pletform of the presental computer is to some for personal computer is to be computers. In vary much more fundamental than size A personal computer is to the little computer.

puter at all.

This notion that a personal computer is best explained by using an analogy to transportation. Imagine that a reamportation, imagine that each analogy to transportation. Imagine that each act which is element of motor which is element. The department's introductory course might continuum of motor whiches, the entitled for each continuum of motor whiches, the entitled for each of the entitled of t This notion that a personal co

It is best not to think of it as a com- having powerful engines and enor naving powerful engines and enor-mous carrying capacity. And the chart would position cars as low-performance, "toy" motor vehi-cles, with underpowered engines and almost no cargo carrying ca-

pacity. Similarly, to conceive of person-al computers as computers be-cause they have system compo-nents (CPU, primary storage, disk drives and so on) and to think of them as "little," or "toy" versions of mainframes and minis are mis-guided notions and avoid a mean-ingful understanding of their role in the office.

Personal computers have dra-atically altered the economics of

computing, making feasible all sorts of applications which are not economically or conveniently cur ried out on a shared-bost basic Spreadsheet analysis and word processing are two convenient ex processing are

The core of the personal com nuter's assessment of the personal comlivers computing power on users terms without requiring them to give up autonomy or to depend on the overburdened DP departm to get the work done. Also, all of the personal computer's resources are available to one person. That means there is no overhead for the software that administers the shar ing of one processor, in addition sponse times are found for most office applications

Just as the choice of a car and its options allows users to personally options allows users to personally address their needs and prefer ence, so does a personal computer. The user-tailorability of a percomputer is formidable. wholly beyond what would be pos sible with a shared computer. whose functionality represents a compromise facilitated through the trading off of the needs of year

eral users. The lead time required to implement a personal computer application is also much shorter than for data processing systems, on the order of dws or works

To press the analogy to trans portation a bit further, a truck is so expensive to own and operate that idleness becomes an enemy to be avoided by scheduling in advance to keep the vehicle running. With a car though adlenger is a fine and valuable thing called "availability"

allowing immediate accurrat the user's whim for whatever pur pose desired This analogy is the ame for come The fact that the personal com

nuter is title most of the time means that the marginal cost of commutine approaches zero. This in turn means that new applications can evolve far more easily than in a traditional data process ing environment where the marginal costs of computing are so large that they routinely require elaborate cost benefit studies and long lead times for planning and

In defining a role for personal computers in advanced office sys-

tems it is important to consider both the personal computer's strengths and weaknesses, as well as to provide host/network services as a means to augment per-sonal computer capability, and overcome its limitations. The table below summarizes personal com-puter advantages and disadvantages compared to traditional da processing systems

If the multifunction personal computer has one major purpose, it is to serve as an applications development machine for nonpro-grammers. The most successful software packages for personal -computers are not really applica-tions at all, but either "tools" through which the user can devel op his own applications with - in op ins own applications with — in lieu of programming. No more convenient example exists than the spreadsheet. The user who, af-ter creating a few spreadsheets on his personal computer, replaces a stack of paper spreadsheets and a manual process with a computer-ized process and a set of machine readable files has developed an application. This application, howev-er, does not fit the standard notion

The Personal Computer: Pro and Con

ADVANTAGES

DISADVANTAGES

of applications development, and compared with procedural lan guage programming environments there are many restrictions. None-theless, a user-developed applica-tion it is, and it is much quicker and cheaper than more traditional applications development. The three most widely implecompared with procedural lan

mented types of personal computer office software are word no cessing packages, spreadsheet/ modeling packages and data mangagement systems. In addition, there are five other popular types of packages, including systems for communications and terminal emulation, graphics utilities, vertical applications, report and applicafor integrated application environ

These five software types are not as widely implemented as the first three, but are rapidly gaining in popularity. The last type listed, user shells for integrated application environments, exists in two major forms. The first consists of bundled packages (such as Lotus Development Corp.'s 1-2-3 and Vi-sicorp's VisiOn), which incorporate spreadsheet, word processing, graphics and sometimes other functions.

The second are packages that al-low users to assemble their own integrated system using software packages of his choice. Examples of the latter include Epic Comput-er Products, Inc.'s Supervyz and The Information People's Organ-

Data management and personal word processing packages, are widely used as applications devel-opment tools for nonprogram-mers. The data management pack-ages, some of which are really data base management systems (DBMS), allow users to define forms to collect data and to report

formats.

Some personal computer DBMS packages now have available application generators which allow users to define nonprocedurally an application and have the machine erate high-level source codes.

The list management modules of WP systems are routinely used to implement crude transacti processing systems: inclegant by DP grandards but attractive to per sonal computer users who value speed of implementation and self

reliance The wide implementation of data management packages on per sonal computers has prepared many end users for appreciating DBMS packages and tools Gusch as query languages) available on minicomputers and mainframes. Technologically oriented person el tend to think of personal computer functionality in hardware trees to contrast to this, ext. The wide implementation of terms. In contrast to this, end-users tend to think of personal computer functionality in terms of the applications software base available for a given machine.

given machine.

While the merits of personal computers as stand alone ma well-known, users quickly come to expect to be able to connect their systems to other personal computers or to time sharing hosts as an intelligent terminal. Communica-tion capabilities on personal computers are important because they allow users to exchange docu-ments, data and software with coworkers

Communications capabilities also allow personal computer users access to data existing on corporate and departmental DP hose by allowing such access, many of the DP applications now geared to periodic large report generation can be reoriented to on-demand query processing, reducing the cost and workload of data process Communications capabilities

cost and workload of data process-ing centers.

Communications capabilities are essential to personal comput-ers used as office workstations. Of-fice workers are "team players," devoting 60% of their typical work day to communications activities. Usually, office workers prepare documents or calculations to be yent to at least one other person. Most of the documents processed by office workers are in turn at least partially prepared by their day to con

colleagues. Therefore, it is a key requirement that the personal computer allows users to exchange as well as to prepare docu-

Most popular personal comput-ers can serve as terminals to bost and networks. However, most per sonal computers in use today func-tion as stand alone machines. This is due in part to the historical an-

The multifunc tion personal computer has one major purpose, it is to serve as an applications de-velopment machine for nonprogrammers.

tagonism between DPers and per tagonism between DPera and per-sonal computer users A conspicu-ous exception to this rule are personal computers that are used to access the rapidly growing num-ber of on line data banks and infor-mation utilities such as Dow-jones, Compuserve, Inc. and Source Telecomputing Corp. Ex-ternal host/network services allow office workers to obtain and send information outside of their orgainformation outside of their orga-nizations nearly as easily as they can within them. This is a key ben-efit of advanced office systems. Most electronic mail implementa-tions at present are tackled at the Most destroate mail implemental book destroate mail implemental departmental or compose level. This locers unsattlifed the need to make the control of the c

on the personal compuler, ma nipulating the communications port and modems to provide such actions as

"Dumb" terminal emulation Liploading of local personal competer files to the bost

 Downloading host data to iocal personal computer files Automatically dialing how telephone number, with repeated

The wide implementation of data management backages on personal computers bas prepared many end-users for appreciating DBMS packages and tools (such as query lan-guages) available on minicomputers and main.

redialing if the line is busy or there

is no answer.

• Definition of personal com puter function keys as "macros allowing repetitive multiple key sequences to be sent with one key

 Automatically executing host logon sequences

logon sequences.

• Unattended host access and file upload/download operations. Although about three-quarters of the functions required by office workers can be delivered by the personal computer in stand-alone mode, the other 25% requiring host/network access is of critical importance, far more than its pro

A personal computer user may spend one hour manipulating spreadsheet data and using a personal word processor to fold the data into a memo and might then

consume only 30 seconds of boss connect time unleading the memo to the bost that he uses for also tronic mail But the thor boat som next time might save other workers four days of waiting, ultimately shortening the time needed to

complete the test seek Another key issue in defining an office role for personal computers is accountion and operating com-Office systems are aimed at having at least one workstation per office worker. Consequently, the total cost per workstation is even more important than in traditional data processing and word processing custome

perceived as too expensive for with terminals. But a personal computer is often cheaper. The usual comparisons show that ter minsis cost between \$500 and \$2000 while a personal computer This is an unsound basis for com parison because a personal com

puter by itself delivers a multitude of functions, whereas a terminal by itself does nothing. Rather than considering only the isolated price of a workstation what should be measured is the cost of total system resources

needed to make each workstation (whether personal computer or terminal) provide the function required by office workers. This involves allocating a share of the to-tal cost of operating the host system that supports the terminal or personal computer. Such costs

 Host system processor mem ory and disks Host system peripherals Host system software acquisi

 Software development labor Hardware/software mainter nance labor and contracts

DP center labor

Upon factoring in these costs. we see that terminal cost is merely the tip of an iceberg. The over the tip of an iceberg. The over-whelming cost is in the "under. sea," or invisible portion. The first three cost categories liged above are limited costs, typically amor tized over a seven-year period. But the last three categories continue for the life of the system, in face they actually become more expen-sive every year, due to labor cost

The personal computer has a Personal computers are often hidden portion, too, but typically a much smaller one than the termi nal. The reason for this is simple the terminal must be connected to the terminal must be connected to the relatively expensive, shared host services for all of its functions to be performed while the person al computer need only be connect ed for a small portion of its activity over, that connect would no need to occur during pame time Personal computer communication software could be used for un arrended host access and unload/download during off-peak

> The net result is that the num ber of personal computers that can be connected to an office host is usually between two and 10 times larger than the number of termilarger than the number of termi-nals that could be connected. Con-sequently, the personal computer annual share of the hox-operating costs is much smaller than that for a terminal.

Aranda is workstation and vi-deotex product planning manag-er in the Office Information Systems Group at Digital Equipme Corp. located in Merrimar 'N H



FAULT TOLERANCE Knocking Out Downtime

Interest in futuroleran (FT) systems, which for nearly eight years was limited to Tandern Computer. Inc. and its products, has greatly interestified over the past venture capital three been invested in a number of FT start ups, including Straus Computer, Inc., 5m (ST) systems Corp. and Tolerant Transaction Systems. At least two well-casabilisted companies. (If wellest Consoles, Inc.) have also entered the field Others, including IBM, NCR Corp. and ATR4T; are expected the IRM (ST) of the IR

The main reason for this en

By Omri Serlin

hanced interest in FT systems is the rapid development of on-line the rapid development of on-line the rapid for the rapid of the rapid batch systems, on-line systems are at the heart of many modern basi-nesses. Examples abound in many industriets: reservations systems for atfirites, hotels/motels and car rental agencies, to mention a few rental agencies, to mention a few few such classical back office ap-plications as accusing psyalle and in the rental agencies. The rental agencies when while on line systems lead to While on line systems lead to While on line systems lead to

on-line
While on-line systems lead to
higher employee and process productivity and more timely reporting, hence tighter business controls and new or improved
customer services, they also make
the business much more fragile.

data base.

Fault tolerant features were incorporated in some of the earlies relay and vacuum-tube digital computers. In the 1960s, however, interest in FT features declined as the introduction of transistors and integrated circuits greatly improved component reliability. The

LLUETANTON BY NOWIO TO

development of error correcting codes brought solid state mer ries to the reliability level of the older magnetic cores. FT tech names continued to command in terest in a few specialized applies. tions areas, including computer controlled telephone switching, military and core cial real-time monitoring and com-trol systems. Fault tolerance also aroused interest, though to a lesser

T andem capi talized on the maturing minicomputer technology to achieve a price/performance edge vis-a-vis main-frames. Today's powerful 16/32-bit microprocessors are likewise making possible new FT designs that were economically out of the question only a few years

degree, in the commercial timesharing area

The typical solution to the blob avallability requirement during the 60s censered around the back-up concept in which a second con plete system stood by ready to take over the load should the primary system fail Some switching ar rangement, typically manual was provided to switch the peripherals rom one system to the other. Soft ware for such systems was general ly custom fit to the application, of

ten by the end user The development of airline res tions systems in the late '60s and early '70s was significant for two reasons. First, while these systems still used variants of the re dundant back-up scheme, they also served as test beds for many of ne practical aspects of today's fault-tolerant systems, including the concepts of disk mirroring, record and file locking, checkpointing and audit trails. Second, they were the harhingers of the online transaction processing appli-

cutions which today constitute the largest potential market for fruit tolerant systems

Tandem Arrives on the Scene In 1975, Tandem's founders as tutely recognized that the on-line

transaction processing field would eventually prove to encompass numercus applications and that most such applications could be better served by an architecture that rehed on a multiplicity of minicom puter class processors, rather than the giant mainframes used in the airline reservations systems Using existing minicomputer technology, Tandem developed a nique new architecture that for the first time delivered true fools tolerance at an affordable cost Tandem's solution, now called Non Stop, differed from the redun dant back-up scheme in several important respects. First the many

single points of failure inharem in the older schemes had to be elimited Second the Tandem custom offered, for the first time, the ability to remove defective subsestems and return repaired ones to service without disrupting onening opera-The extent of the on-line rene capability is a touchstone test for ny system claiming to offer fault which gradually restores the re paired drive to mirror condition. tolerance. Achieving this capability requires such hardware features as

system and provisions for cor ling electrical transients created by printed-circuit board removal and insertion. More importantly, the software system must be designed to accommodate the on-line removal and reinsertion of subsys tems in a way that isolates the us er's programs from such changes in the system's configuration. The subsequent wide market accep-tance enjoyed by Tandem is due in no small measure to its success in meeting these design goals

a redundant power distribution

A Tandem Non Stop system co sists of anywhere from two to 16 processors. Each processor is in effect an independent 16 bit minisuter with its own memory and I/O channel. The more recent

Non Stop II added a limited 42-ha addressing capability. A high-speed (6.7 MHz), 16-bit-wide bus system connects all processors and is used for interprocessor commu-nications. Dubbed Dynabus, this system actually includes two idea. tical 16-bit buses, each with its own access controller, which arbi-

trates bus usage among the proces-The peripheral controllers or dual-ported, so that each may be accessed by I/O channels from two different processors. Dual-access disk drives are each attached to two controllers, thereby pour ing that the data they hold is acces sible even when both a controller sible even when both a controller and a processor fall. To guard against the loss of data due to a failure in the drive itself disk mirror ing can be invoked by the user. When active, disk mitroring causes the system to maintain sure-

matically identical copies of the designated files on two indepen dent drives. This action is transpar ent to the user. In normal open tion, the system will execute all write requests to both disks, while satisfying read requests from the head nearest the desired data. Folwing the recovery of a failed drive, the user can invoke a uti

A copy of the Guardian operat-ing system, along with a table of available resources and their location, is kept in each processor's memory. At regular intervals, each processor is required to broadcast an "I'M ALIVE" message on the Dynabus and to verify the receipt of such messages from all other processors. This is a generalization of the watchdog timer scheme, used in redundant back-up systems to detect "stalls," meaning a farled processor or one caught an infi

Checkpointing

Recovery from failure in the Tandem system relies checkpointing concept. Each run-ning process has a backup, an inactive counterpart residing in another processor, ready to take over should the primary process or the primary keeps its backup up to date by sending it checkpoint mes-sages, each of which defines the state of the process at a given critical point in the computation Should the primary process (or its processor) become disabled, the system will awaken the backup process, which will then resume

the task from the last checkpoint. Backup processes and checkpointing are still the key recovery mechanisms used by the Tandem system's software. For a variety of reasons, this method proved to be undesirable at the applications program level. A few years ago. Tandem introduced new system software elements called Pathway and TMF, which allow the app tions programmer to disregard the complexities of checkpointing. Pathway provides centralized ter-minal handling capabilities, while TMF assures the consistency of the lata base by undoing the effects of incomplete transactions, and by keeping audit trails which permit the reconstruction of a data base the reconstruction of a data base should it become necessary. The user provides "server" routines which interface between Pathway and TMF and which are expendable in that their loss will at most

require a restart of a transaction.

A key feature of the Tandem software is the isolation of user processes from configuration de sage system. For example, when an applications process wishes to an applications process wishes to obtain data from a disk driver pro-cess, it must formulate a message addressed to the logical disk in question. The message is handed over to the operating system, which determines the actual destination by consulting the local copy of the resource directory. The user process need not know which two processors have access to the disk in question, nor which one is currently the primary. This isolation is of course essential in order to per-

This isolation has, somewhat

unexpectedly, yielded two addi-tional and significant benefits since the system can dynamically since the system can dynamically accept repaired modules, it can also in the same fashion accommo dote nim ones. Thus it becomes possible, for example, to increase the transaction handling capacity of the system by simply plugging in additional processors. This "graceful growth" capability is sb attractive, compared to the alternaattractive, compared to the auctives of initially buying extra ca pacity or going through an up grade that many prospects have selected Tandem based primarily

on this aspect of the system Furthermore, since processes are largely unconcerned with the are largely unconcenied that the as other processes or peripherals). as other processes or peripierans, it becomes relatively easy to ex-nand the system to include geo graphically dispersed nodes or nected via long-haul nications facilities. communications facilities, possi bly including satellite links. Only the resource tables used by the op enting system copies need to be updated to account for remote nodes. Expand is the Tandem soft ware component that handles net

ware component that handles ne-work routing. Tindern is now building on its networking capa-bility by developing comprehen-sive corporate information ner-works, which it dubbed Transfer-Some 4,000 Tandern processors have been shipped to approxi-mately 600 customers since 1976. Until quite recently, Tandern en-joyed freedom from comparable competition. Now, however, the technological environment is again reminiscent of the one which prevailed when Tandem got its stan. Tandem capitalized on the maturing minicomputer technology to to achieve a price/perfor Today's powerful 16/32-bit micro

processors are likewise makin possible new FT designs that wer economically out of the questio only a few years ago. Stratus' Pair and Spare One such design is the "pair and spare" concept, employed by

Stratus Computer of Natick Mass Stratus Computer of Natick, Mass. The company was established in mid. 1980 and has attracted nearly \$15 million in venture capital. It began shipping in February 1982; by the year-end, it had 22 custom-ers and 35 processing modules in-

Stratus ' Processing Module (PM) is a self-contained computer with its own memory controllers and peripherals Each subsystem

T be Stratus ap roach bas immense appeal to broshectine customers hecause it requires no recov-ery from a failure. The work goes on, using the duplexed subsystem, without missing a beat, and without the need for checkbointing.

within the PM is typically con nined on a large printed circuit board. The functions of the subsystem are duplicated (paired) on the board to facilitate self-checking board to facilitate self-checking. Each subsystem runs in tight syn-chronism with an identical subsys-tems (the "duplex" or "spare"). For example, the CPU board con-tains two CPU functions, each based on the Motorola, Inc. 68000 based on the Mosorola, Inc 68000 microprocessor (actually, two 68000s are used). The pair of CPU functions (four 68000s in all) neceive identical inputs; their outputs are compared (self-checked) on each clote pulse. Should a discrepancy be detected, the board "pulls out," letting the duplexed CPU board carry on with the task at the course the built beaut him. CPU board carry on with the task at hand. Once the bud board has been repaired and reinserted, an interrupt alers the running processor, which then undertakes to reducen the "new" board and on the board and the board of the bo

(Continued on Page 40)

Fault-Tolerant Systems:

COMPANY/SYSTEM		TARGET MARKETS	CPU TECHNOLOGY	OPERATING SYSTEM
Systems, Inc. Cart Fal 300	18277 S.W. Boones Ferry Road Tigard, OR 97223 503/684-5330	Industrial automation & process monitoring/ control 100% and user	Three Intel Corp. 8086- based processors run identical code when in FT mode	RTTS (Real Time Task Scheduler), one copy per CPU
Auragen Systems Corp. System 4000	210 Sylvan Ave Englewood Cliffs, NJ 07632 201/894-0620	On-line transaction processing (OLTP), medium to large companies 100% OEM	Up to 32 clusters." Three Motorcia, inc. 68000's on a high-speed duplex, parallel bus	Bell Laboratories' Unix with internal modifications, one copy per cluster
Autech Corp. DAC-6000	Data System Division 1301 W. Copens Road Pompeno Beach, FL 33064 305(979-2700)	industrial automation & processing monitoring/ control 100% and user	Dual 88000-based Displaymaster and Decreaster Zilog, Inc. Z80A-based Process I/O Modules	Ade process control development system plus read only memory routines in Dacmasters control end Process I/O Modules
Computer Consoles, Inc. Power 5/55	97 Humboldt St Rochester, NY 14609 716;482-5000	OLTP, medium to large companies; 100% end user	Up to eight 68000-based CPUs with 68000- based disk and terminal controllers	
Hewlett- Packard Co. Systemsale 1000	Data Systems Division 11000 Wolfe Road Cupertino, CA 95014 408/257-7000	industrial automation & process monitoring/ control 100% end user	Two HP1000 Models 60 or 65 working in 'hot backup' mode (16-bit, moro- programmed)	RTE-6/VM, resistime, multitasking, virtual memory, one copy per CPU
Paratiel Computers, Inc. CPU	501 Cedar St. Santa Cruz, CA 95061 408/429-1338	OLTP, very small to small companies	Three to five 68000s on a bus	Xenis, one copy per CPU*
Sequoia Systems No Name Yet	1 Metropolitan Corp. Center Marboro, MA 01752 617/481-9520	Gong after Digital Equipment Corp. VAX users	Up to 64 88000- based CPUs, pro- bably self-checking, with shared memory	Unix competitie, one copy per CPU , (despite shared memory)
Stratus Computer, Inc. Status 32	17 Strathmore Road Natick, MA 01760 617/653-1486	OLTP, small to medium companies 70% end user, 30% OEM/IBM Series 1	Each self-checking CPU has two 68000s, each Processing Module can have duplexed CPU and memory and controllers. Macrisum 32 Processing Modules on a ring-type local-area network.	VOS (Virtual OS), one copy per CPU
Synapse Corp. Synapse N+1	801 Buckeye Court Mipitas, CA 95035 408/945-3191	OLTP, medium to large comparies 100% OEM now	Up to 28 68000- based CPUs and Tops (I/C) processors) working agenst a shared memory wa a duplexed, high-speed 32-bit parallel bus.	Synthesis, one copy in shared memory
Fandem Joseputers, Inc. Non Stop II	19333 Valloo Parkway Cupertino, CA 95014 408/725-8000	OLTP, medium to large companies 88% end user, 12% OEM	Up to 18 CPUs on a duplexed, high-speed, 16-bit parallel bus CPU is 16-bit microprogrammed.	Guardan, one copy per CPU
olorant fransaction lystems Plus 32	681 River Oaks Parkway San Jose, CA 95131 406/946-5667	OLTP, small to medium companies, Also real time, and user end OEM	Two National Semi- conductor Corp. 16000's in each System Building Block	Transaction Executive, Transaction/Operator Interface elements may be replicated in serie or multiple System Building Blocks.

The Major Competitors

		PERFORMANCE/CPU	-	NECOVERY SCHEME	ESTIMATED REVENUES A EARNINGS FY '82
	MEMORY SYSTEM 32K-bytes per CPU on-buent; up to 1M-byte per CPU on Multibus	(MEPS & TPS) Approximately 0.4 Mips/Intel 8056 & system, 255 points typical maximum and up. TPS: not minyant	CPU FAULT-DETECTION At start of each iteration, three CPUs check state data and vote out bad data. Transient faults thus automatically food.	Received processor reads	
	Up to BM bytes per cluster (1M byte/board)	0.85 Mips/duster (company figure), so nominally 27 Mips/system at full expension. 1.5 TPS/CPU (estimate)	Self-detect via idle degnostics	Backup cluster picks up load	Revenues NI Earnings (\$2.6M)
	64K bytes to 256K bytes per CPU, parity battery back- up on board Crnos static	Decreater supports up to 256 process pointsTPS: not relevant	Timeouts, cross degrostics	Auto switchover to beckup Decreater on stall (timeout)	None from Data Systems Division
	512K bytes to 4M bytes per CPU, error checking & correction, bettery beckup. Each of two lintel computer controllers has 512K bytes.	Normally 5.6 Mips (0.7 per 68000) 2 TPS/CPU (TOM estimate) due to multicopy data base	ICCs time out transactions; bad ICCs detected by CPU voting scheme	Next available CPU completes installed trans- action or bad ICC functions.	Revenue \$53M Earnings \$7.4M (Estimated 80% FT)
	256K bytes to 2M bytes per CPU; 1 parity bit/16 bits of data	Mips (200K Floating point operation/sec. mod 65); Hence 1 Mips/ system. TPS: not relevant	Watchdog timer times out	Peripheral switch flips over, "not backup" CPU informed via interrupt	Revenue \$4B Minimal FT contribution
	Maximum 2M bytes/ system	Hard to say until architecture settles down,	Conventional	Manual replace & restart	Revenue NI Earnings small loss
	N/A	Sequole claims up to 40 Mips at full expension.	Probably some time-outs on entries in shared memory	Next avalable CPU picks up staled transaction.	Revenue NI Earnings (\$3M)
	SM bytes effective (16M bytes actual) per per processing module (2M bytes/board).	85 Mips/CPU (ITOM estimate); nominally 27 Mips/system at full expansion	Self-checking subsystem puls out & generales ned light' interrupt to operating system	"Reeducation" pro- cedures synchronizes repaired module with one that's running.	Revenue \$5.4M
1	16M bytes/system (1M byte boards). Error Checking and Correction	0.7 Mips/CPU; system Mips depend on how many CPU configured. 2 TPS/CPU (ITOM setmate, due to shared memory) if supported by enough I/O Processors	Some time-out mechanism in shared memory	Next available processor picks installed transactor that's been checkpointed into shared memory.	Earnings (\$4M)
-	8M bytes/CPU (2M bytes/board), Error Checking and Correction	Non-Stop I: 0.7 Mips (Tandem cetimates) Non Stop II: 0.8 Mips (Tandem cetimate)	Absence of I'M ALIVE message: each CPU must broadcast over Dynabus each second.	Backup process in enother CPU picks up transaction from last good checkpoint eant by primary	Revenue \$335M Earnings \$26M (codmeted)
	1M byte to 4M bytes per System Building Block	1.5 Mips/System Building Block (Tolorant estimate)	Timeouts and I'M ALIVE . messages	Buckup System Building Block Isless over	NA

(Continued from Page 37) licated four times: twice within each of the two duplexed boards It would have been economically impossible to achieve a complar do gree of redundancy with minicompater rechnology

The Stratus approach has immense appeal to prospective cus-tomers because it requires no re-covery from a failure. The work goes on, using the duplexed sub-system, without missing a heat

Synapse calls their architecture N+1: by baving one more than the N applications processors required to service a given load. the system achieves essentially the same degree of resiliency as one in which each processor is backed by another processor (the 2N approach).

and without the need for check pointing. To avoid the possibility that such a failure will go undetect ed for a long while. Strams has equipped its systems with auto matic dialers that call in to a sup port center to report failures. Only when a defective module is returned to service need the system be interrupted momentarily for the ration process.

Up to 32 Processing Modules can be conne cted together over a can be connected together over a ring-type, 11.2M-baud local-area network which can be duplexed. The system supports a global nam ing convention that allows users to access resources by logical names. without regard to their physical lo cation Geographically dispersed PMs can be accommodated as

Bell Laboratories is also using self-checking approach in its 3B20D system, the latest in a series of Bell Labs/Western Electric prossors. The memory systems of the two (duplexed) processors are kept in mirror image condition by

special hardware. One of the processors is the primary, while the second acts as a "warm" standby The system stops short of imple menting the Stratus tight levision scheme A single processor (su plex) version, the 3B20S, is all ready being offered to the Bell on erating companies. The 3B20S and B20D may exentually be available commercially, although the under lving minicomputer technoloes may not compare well with today's breed of microprocessor based

contact. The Synapse N+1 Concept

A multiplicity of 68000 micro processors is also used in an FT system from Synapse Computer The Milpitas, Calif. based compa ny was founded in late 1980, and is capitalized with nearly \$26 milli in venture capital. The first two shipments took place in December

1982 and February 1983 The Synapse architecture con sists of up to 28 processors each hased on the 68000 microprocess ing unit. Some are applications ing unit. some are applications processors while others are I/O processors. All are "tightly cou-pled" via a duplexed, 8 MHz parallel bus system to a shared m system. This shared memory holds the only copy of the operating sys-tem, along with work oneses flags and semaphores

The applications processors form a resource pool which is available to service the transactions being prepared through the I/O processors. These processors, which contain substantial private memories, support dual-ported controllers which service the terminals and the disks. The applie tions processors are self-dispatch ing: whenever they are idle, they look up the work queues and asready transaction. A large, fast cache in each applications proces sor allows them to execute the

common operating system without stressing the bus system Synapse calls this architecture N+1: by having one more than the N applications processors required

to service a given load, the system achieves essentially the same de-gree of resiliency as one in which each processor is backed by another processor is backed by anoth-er processor (the 2N approach). The main strength of the Synapse scheme is the extent to which it screme is the extent to which it supports both graceful degradation and graceful growth. Although the shared memory system seems to be a single point of failure, the Synapse software and hardware is prepared to deal with a faulty memory. The system can quickly reboot itself, bypassing the failed memory. Data base consistency memory. Data base consistency and recoverability are assured through a combination of system software 'and applications pro-gramming conventions.

Auragen's Unix Connection

Auragen Systems is another start up which plans to offer an FT design based on multiple 68000 based processors by using still an other architecture. The New Jersey other architecture. The New Jersey company, founded in 1980, recent ly unveiled its 4000 system, which consists of up to 32 clusters, inter-connected by a duplexed, high-speed bus system. Each cluster is a multiprocessor system in its own right, consisting of a 68000-based Executive Processor, in charge of system functions and bus interface; a Work Processor, utilizing two Motorola 68010s, which executes

Motorola 68010s, which executes the user's programs; up to four 68000-based communications processors, and up to four ba-slice disk/rape controllers. A high-speed internal bus system connects these processors and up to four 8M bytes of common themory. Peripheral controllers are dual-port t each may be each attached to rwo clusters.

A unique feature of the Auragen
system is that its Auros operative
system is derived from and is compatible with Bell Labs 'Unix. The
software has been internally enhanced to support the system's architecture, and has been augment
ed with Oracle, a relational data

base management system from Or acle Systems, Inc.

een has also entered into a

technology exchange agreement with Nixdorf Computer AG; of West Germany, which should belo Auragen's growth in the FT arena

Microprocessors are often combroad with local area networks in new general-purpose systems as well as FT systems. Steams as not ed above, employs a local area net work to interconnect its PMs. Tanhas announced fiber-opfic-based local network to interconnect a number of local nodes, so that more than 16 pro-cessors could be brought to bear on larger transaction systems

The significance of a local-area network as a low-cost, high-speed inter-processor communications facility has not been lost on Toler ant Transaction Systems (TTS) a ant Transaction Systems (115), a 1982 start-up based in San Jose, Calif. TTS is developing an innovative solution to the fault-tolerant on-line transaction processing re quirements, involving a loosely coupled arrangement of System Building Blocks (SBB) Each SBB. which is based on a pair of National Semiconductor Corp.'s new NS16000 microprocessors, is con-hected to a common, duplexed. Ethernet-type local-area network The system can begin with a single stand-alone SBB and grow to as many as 14. The system's software components can be replicated in components can be replicated in one or more SBBs, to provide resil-iency and to orchestrate the SBBs into a coherent system which ser vices the load cooperatively

IBM has taken some steps in the e direction. In October 1982, IBM released a new version of the Real-Time Programming System operating system for the Series/1 minicomputer, which supports the interconnection of multiple Series/1 processors on a duplexed, ring type local area network, dish mirroring, and additional distribut ed control features which could be used in constructing FT systems Interestingly, only a month earlier, IBM researchers revealed the de-tails of an experimental "System D," an on-line transaction process ing system with a strong FT fla

vor, based on a ring of Series/1s

A local area nermork plants me for role in the design being devel-oped by Computer Consoles, Inc. (CCI), of Rochester, N.Y. The \$60 million publicly held company, founded in 1968, is a leading supplier of directory assistance sys-tems (DAS) to the domestic tele phone companies. The CCI Perpetual Processing architecture is derived from the DAS configuration. The system consists of up to eight 68000-based proces each of which is connected point to point to all the disk controllers which are also 68000 based. Thus each disk is accessible directly

The processors are nected to a duplexed Ethernet-like local-area network, to which the terminal controllers are also at tached. A central arbitration box tached. A central arbitration box, called the Interprocessor Commu-nications Coordinator (ICC), is also attached to each local-area network; it regulates disk accesses, not local-area network usage, which utilizes Carrier Sense Multiple Access/Collision Detect arbi

from any processor

The full connectivity between The full connectivity between the processors and all other elements of the system allows each processor. The CCI system makes use of this important advantage by supporting a powerful generalization of disk mirroring, the data base can have several mirror images, and the system automatically maintains a "write to many, read from any" policy

Process Control and Industrial

Not all of the new FT activity is in the on-line transaction process ing field, although it is the largest and most promising Some compa nies are addressing FT designs to the process control and industria automation markesplace.

One such company is Autech Corp., whose Data Systems Divi-sion in Pompano Beach, Fla., is a 1980 start-up. Autech is using mi

work technologies to develop a environments

August Systems of Tigard, Ore., founded in 1978, is oursuing a sim ilar market with its Can't Fail sys-tem which utilizes three Intel tem which utilizes three intel Corp. 8086-based processors in a triply redundant configuration. Hewlett-Packard's HP 1000 se-

ries minicomputers have lone been popular in industrial environments Systemsafe 1000 an

A unique fea ture of the Auragen system is that its Auros operating system is derived from and is compatible with Bell Labs' Unix. The software has been internally enbanced ... and bas been augmented with Oracle, a ttional DBMS from Oracle Systems, Inc.

nounced in October 1982, is based on the somewhat aging HP 1000

Some Open Issues If one discounts the relatively minor IBM Series/1 and HP 1000 efforts in the fault tolerance mar ketplace, the absence of the 'big guars' from the FT seene is nota-ble. This absence is puzzling, in view of the multibiliton dollar market projections for various FT applications.

applications. The problem faced by the lead-ing mainframe and minicomputer vendors is that, in order to offer fault tolerance on the Tandem scheme, much of the existing software, at both the operating system and standard application levels, will have to be neworked or diswill have to be reworked or dis-carded. Stratus "pair and spare" scheme could be employed to lim-it the impact on the software; but such an implementation will have to rely on ad-hoc logic and so will not be able to take advantage of the cost economies offered by standard, off-the-shelf microprocessors.

Nevertheless, it is probable that certain mainframe and minicomputer suppliers will attempt to offer systems with some FT flavor within the next year of so.

within the next year or so.

Plug compatible manufacturers IPL Systems, Inc. and Formation, Inc. have already unveiled dual-processor IBM-compatible systems. IBM executives have hinted at some work along those lines in at some work along those lines in the large mainframe area in addition to the Series/L efforts do scribed above. Digital Equipment Corp. recently introduced a shared disk, shared memory scheme for its VAX 11/780 and Decsystem 20 Bank Come Amilable Tellam Com tems Corp. is developing an IBMcompatible supercomputer than will feature some measure of fault tolerance at the component level NCR Corp. is known to be consid-ering a FT system based on its 32bit chip set (which powers the re-cently introduced 9300 and 9800 systems), as well as its 68000based Tower Hewlett Packard is believed to be considering how to endow its HP 3000 series with FT res, in addition to the Systemsafe/1000 mentioned above. Using its Ringnet, Prime Computer, In could provide an FT system similar to the IBM Series/1 ring

These systems are likely to be far less elegant and convincing than the architectures offered by the new FT suppliers already described, who are not constrained by the need to maintain compatibility with an existing software

One development which could change the picture dramatically is the availability of FT features at the chip level. Intel has made a start in

this direction with its 432 family.
Chips in that family incorporate
Punctional Redundancy Checking ra
(FRC), which greatly simplifies
the design of various "pair and
spare" architectures. Unfortunate
by the 432 has not been a commer-

cial success so far. Wide availability of FRC-equipped semicustom chips could allow the leading computer vendors to build economical FT architectures that support exis-

ing instruction sets, thereby minimizing the impact on the software. It is made to the control of the control of the error tend to base FT systems on esors, begun by Tandem, is not limminimized to the control of the control sort, begun by Tandem, is not limtered to the control of the control sort, begun by Tandem, is not limtered to the control of the control sort, limiting the control of the control of the control of the control of the tens. Other factors may be at work of the control of the control of the control of the times. Other factors may be at work of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the sort of the control of the control of the control of the control of the sort of the control of the control of the control of the control of the sort of the control of the control of the control of the control of the sort of the control of the control of the control of the control of the sort of the control of the control of the control of the control of the sort of the control of the sort of the control of

a great cost.

However, as users begin to delaw the second much be a second, much we more powerful processors will be arequired. An arrangement involvigia pair of very powerful process sons would be better suited to this pair, as the second process sons would be better suited to this pair, as the second process sons would be better suited to this pair, as the second process of the second processor sponsors that the second processor sponsors, and Japan have always relied on the dual-processor approach.

Pauli tolerance at the hardware level is well within present tech-inology. One can never have absolute protection against faults, but it by investing more resources in the system, it is possible to increase its depth and coverage. Depth is a measure of the survivalities of the

system in the face of multiple failures, while coverage implies the range of possible failure types with which the system is equipped to deal. The probability that a fault will have an impact on the end user can be reduced to an acceptably low level.

ably low level.

However, especiance has

However, especiance has

However, especiance has

problems to PT system is not unospected hardware fails, but rain

or bugs in the operating system,

sequence of events triggered by an

error on the part of the user-Soft
more instructible problem. Decume

the design of software is still main

y'a creative process. Some theory

point, for example, "correctness

proofs" which use mathematical

notation and procedures to ex
to prove that it accomplishes only

to prove that it accompanes only the beautiful thromastely, except for very simple subcoutines written in a very limited set of control constructs, the sisk of proving the sources, the sisk of proving the sources, the sisk of proving the sources are sources, the sisk of proving the sources are sources as to make it totally impactical. Other solutions have been proposed, but they are even more limited Progress in this area more limited Progress in this area ereal discipline of software engineering of

Omri Serlin is president of ITOM International Co., a research and consulting firm in Los Altos, Califlie bas authored market research studies on fault-tolerant systems as well as on supermicros and is the editor of ITOM newsletters dealing



Who's Taking Care of The System?

The invasion of peripherals and smaller computers into user departments is changing the staid complexion of maintenance.

By John Harnett

This year, owners of computer equipment will-end an estimated \$8 billion to \$10 billion on main-

This year, owners of computer equipment will beep labor coats down, necessary due to still price and an estimated 86 billion to 310 billion on anian management of the traditional large comporer manufactures. The traditional large comporer manufactures the computation of the coats of the coa

But the truth of the matter is that medium- to large-size communies expect and are willing to pay for on-site service for the full range of computer continuent installed to their operations. Unlike sendors these businesses are not generally concerned about cutton the cost of computer maintenance. Gener ally maintenance costs 5% or less of the annual DP budget and is a miner handache company to the more momentous problems French hy the DP executive

Postite fre quent occurrences of breakdowns in equipment, particularly micros and fussy peripherals, most business operations are willing to pay for bigb quality on site service for the entire spec-trum of equipment installed in the company.

This difference in arringle to wards maintenance between some vendors and users, which was creared in part by the microcomputer in, will spur demand for service from third-party mainte-nance service firms and dealers willing to take on full service responsibility for selected equip-

Independent or third page maintenance organizations began operating in the late '60s and early us as a result of two changing de relopments in the marketplace The first had to do with manufac n' product strategies. As new products were introduced, vendors raised maintenance prices on old er models to encourage migration to new products. Such aggressive pricing opened an opportunity for third-party maintenance firms to offer a price incentive to users.

The second significant develop ment was in plug compatible peripherals. Users built systems by combining products of various manufacturers, but these vendors

penerally surviewd only that comequipment Third party mainte-nance firms began to offer simple source services to users of large. mixed systems, and this particular development has spilled over from the traditional large scale data pro cession computer environment to the micro resolution of the road

Many of today's manufacturers will not or a moly cannot afford to invest in both the mannower and capital required to establish effect tive support service for their prod

Some established manufactur ers are divesting their service operations in order to invest resources in marketing or research and de velopment Rexon Business Ma chines Corp. and General Automa tion. Inc. are two communies that have onted to do this

Major manufacturors office one vice agreements for their own third-party organizations smaller computers and their pur upberal equipment as well as their high-end products. However, ne compunies, such as Xerox Corp., are expanding their main nance operations to service prod ucts from other vendors, recogniz ing maintenance as a potential

revenue producer. The first step in making a mai nce decision is to realize that service plays an important role in the relationship between the pany and its computer. Before even considering maintenance al tematives, the company must fire assess the present computer people and realistic future requireme so that it can select equipment ad

Although some individuals and even husinesses have purchased continuent without church english ing the amount of time it will be used, it generally develops that, once in place, the machines are deluged with applications Many service problems arise from ever

equate for the job

handle the workload.

Thus, even for computer-age chnology, the old adage wise, pound foolish," holds true

Buying an economically priced printer, for example, at first may result in huge operating costs due to frequent maintenance problems caused by overloading Consideration of m

osts should be part of the pur chase decision process. Shore around and compare maintenan costs — they can you from wooder to vendor. In some cases mainte nance cost can be used as a men are of equipment reliability. For example, if two printers that are very similar in speed and printing technology have a 25% differential

in maintenance fees this may look cate a problem with rehabitan Since a maintenance operation will tend to offer service contracts on those products that are relative ly reliable, it is a good endorsement when a product can be set viced by one of the r

Also, service contract prices can e a measure of a product's failure characteristics. The expected ean time between failures and the expected mean time to recour are significant components of

Since service costs will be in di rect proportion to these factors these prices will provide a good idea of what experts in the industry think about the quality of the prod

In general, CPUs are relatively stable items and the annual service charge for this equipment can be as low as 5% of the selling price Yearly service charges for peripherals and communications ment tend to run around 15%

to 20% a year. Likewise, letteruality printers and plotters gener ally sport relatively high mainte-nance price tags largely because the electromechanical features of these products are more readily rone to failur

As microcompr ured with hard disks, expect mair use of equipment not intended to tenance for these systems to run
12% to 15% of the selling ptice.
Equipment that has an interface
involving firmware is a potential maintenance problem

In addition to the cost of service, there are other maintenance factors to consider when purchasing equipment. Convenience and reliability of the organization providing service should also be evaluated. The vendor should be local enough to provide timely service

when needed.

The user should also feel fairly confident that the service organization — whether it is the manufacturer, a third-party servicer or a local dealer — will be in business at least as long as this settem is in on.

cration.

Moreover, if systems are configured with products from multiple vendors and serviced by several or-

ured with products from multiple vendors and serviced by several or ganizations, a method must be developed for avoiding a fingerpointing situation that can arise when different seganizations service different components of the system. Most of the larger manufacturers

Most of the larger manufacturers will service their own equipment but will not support "foreign" per ipherals — any components added to the system not manufactured by them. Some third-party operations repair a limited menu of products and farm out those components they do not handle.

they do his manusce.

Many larger third-party organizations, however, service a broad product selection of processor units and peripherals so that an end user can assemble a personal ized system and be assured that all the parts are serviced by one company. In this situation single-source servicing becomes the most efficient and economical option. Product reliability is increasing.

Product reliability is increasing, but no matter how highly ong; neered a product is, chances are it will eventually need servicing. In addition to overloading maintenance problems also arise from first-time or unsophisticated system uses who are unsure of operation and offer cannot distinguish between a hardware and software

Mishandling of software, such as an Inadvertent ensing of files on floopy or bard disks, is another fre-

quent cause for systems hreak down. Be sure all those who will be using the equipment have a basic knowledge of handling and operating procedures. In addition, moving small deskoop-type equipment around without ensuring thuticis properly secured can be anoth-

sches. Despite frequent occurrences of breakdowns in cequipment, partic described by the companion of all, most basiness operations are willing to pay for high-quality on stee service for the entire spectrum of equipment installed in the company, Although some business sysphiga in capability and allow portale servicing, if they have been in corporated into a local network or telecommunications system, it in night be difficult and risky to unpug the unit for servicing.

becoming more sophisticated, mannenance techniques are also moving ahead with the times Board swapping will be utilized to an ever greater degree in the future to the point where repair as it is known today will be virtually in-

Board ossegoing will be utilized to accept the control of the cont

pair faster and cheaper entered Remote digmosture su entered Remote digmosture su chiaracteristic desiration as system's ability to transmit so operating status to, et to be actually operated from, a service center located oft since Remote diagonal and the control operation of the service discount of the control operation of the service discount of the control operation of the service discount of the control operation of the service discount to carry a wider that the technician to carry a wider than eccessary range of parts and equilibrium of the service discount of the servi

ment in deal with the problem. While this capability has been incorporated in some mainframe systems for some time, its application to smaller systems has been hindered by cost factors. General by, remote diagnostics is not appropriate for swatern before the systems.

a mid range mimouropares such as the Digatal Equipment Corp PDP-II 44 Remote dragnostics can eventually result in lower operating costs over the life of the System. but

f a diagnosing system is detailed enough for in depth analysts of a system, theoretically it has the capability to reach and alter data, thus facilitating computer crime.

huiding this capability into the system increases the unit cost. Its most valuable use is for systems which have complex system soft ware. Statistics estimate that remote diagnostics can eliminate "0% of the service calls for systems in which it is installed Amdahi Corp's systems and DECs VAX series exhibit a significant amount of

remote diagnostics features.

For the time being, there has been no substantial move towards more remote diagnostics in the miscro industry, although it is definitely a future trend, particularly, in network environments.

network environments.

Remote dragnosis does have
some drawbacks. Suppose the syssem is operating in a communications-environment and the break
down occurs in its communication
mode. Remote diagnosis cannot
be utilized because the system
lacks the capability to communi-

Also, remote diagnosis systems could be utilized for computer crime. If a diagnosing system is detailed enough for in-depth analysis of a system, theoretically it has the capability to reach and alter data, thus facilitating computer crime

A spin off of remote disensation called on board or relif diagnosus a becoming more nonular. Already present on an elementary level in some systems, these techniques allong the second to take a mechanic pulse." They can then relay the information to the service center or make their own renaiss which

may involve replacing a faulty board with an operational one. The faulty board can then be forwarded to a renair depot for inspection and

Technology will eventually advance to the Doint where disposable machines, such as today's hand, held calculators are a reality, Priced in the \$100and-under range. It may be simpler and less expensive to replace them rather than to repair them.

possible repairs or exchange End-user self-maintenance will

be especially applicable in more remote locations where on-site servicing might be delayed or too costly, or both

However, in order to run the di agnosis accurately and make the repair correctly, this will require an investment in a parts inventory as well as a basic expertise not cur-rently present in the ordinary busi-The larger, ness environment.

more complex systems will will be entracted to the service organiza

Even with technology improv ing as rapidly as it is, its effect on reducing the need for common will be minimized by a number of fac-

The more tasks the newer more efficient machines can accon date, the more heavily they will be utilized and the more of them there will be Also, desnite the fact that the end-user computing mar ket is becoming more computer sophisticated, there will always be service problems which arise from unfamiliarity with the new sys-

However, the high cost of on site maintenance has created a need for less expensive alterr tives, particularly for the smaller and weer Mail in service has been swail

able to the end user for quite some time. Although the cost is signifi-cantly less than on-site service, it is only really practical for those endusers who are not concerned with muchine downtime

Walk-in or drop-off service is a relatively new phenomenon with several maintenance organizations providing convenient drop off locations. In some cases, these sites are actually service cente tions of a repair facility that have been converted to handle retail operations. Others are simply denote where the machine is taken in and then forwarded to a service

nter for monic Correlo maintenance typically

costs 20% to 30% less than on site service. Although the waiting time is considerably less than for mail. in service, carry in usually involves a period of from one to five days. It is appeared to note to me days. It all products are serviced at these

contess In the future computer service cisions will be more and more dependent on the price of the equipment. Technology will even tually advance to the point where disposable machines, such as to-day's hand-held calculators, are a cooling Belowd in the \$100 and un der range, it may be simpler and less expensive to replace them

rather than to repair them.

Exchanges will probably grow in popularity for equipment in the medium price range. A flat rate will be charged to swap the damaged unit for a new or repaired Even for the more expensive

nits; such options as on-site, mail in, pick-up and drop-off service will be available. Mainframes most likely will continue to he maintained, pre-dominantly by the manufacturers. Everything else will be up for

Harnett is director of planning and development for TRW, Inc., a major supplier of third-party maintenance services located in

Disaster Recovery Planning



Insuring Against the Unthinkable

By Gary Tarkington and Walter Ulric

Computer systems and information resources must be be protected. Disaster recovery planning provides a mechanism to be top a company going in the event of a mechanism to be top a company going in the control external sources. The rise of distributed systems, and worsed communications service and offsee automation have emphasized the necessity for developing disaster recovery blass.

The importance of computers and information systems to a corporation is obvious, but what would happen to a business if the plug were pulled on the information systems?

According to some estimates, a typical company would lose over 40% of its operational effectiveness by the fourth day of a major computer outage. Less than 25% of the company's operations would continue to function after the first week and less than 10% after the second week. Clearly, a complete information system interruption would be devasation.

The potential loss from a comouter calamity is so great that many companies have developed data processing disaster recovery plans The disaster recovery plan is SHEES. that the processing of critical func tions can be resumed quickly after

While band data is not available

it has been estimated that less than half of the Fortune 1000 companies have a plan of any kind in olace. In some companies, the plan is only a "coffee table" piece ned to satisfy auditors. Proba bly only 25% to 50% of these large companies have a plan that would offer genuine assistance. For medi-um-size and smaller communies the record is much worse

saster recovery planning is a well-thought-out and deliberate of n to prepare for the unthinkable During the planning process, ar rangements are made so that nec energy provinces will be available even if the computer room is de prepared so that everyone can re act effectively. The disaster recov ery plan is the definitive guide to restoring valuable information re

A disaster occurs infrequently enough that many DP managers feel that it will not happen to their organization. Unfortunately, disasrs can and do happen The rash of unusually severe weather on the West Coast this past year caused serious interruptions for several companies. Hurricane Iwa also made data processing operations in Hawaii painfully aware of the need for backup power.

But weather is not the only cause of disasters; fire is another Even when the fire damage is neg ered to the center by standard transportation methods. While i ligible, the smoke alone can de-stroy a computer system. Water damage can be caused by fire prowas cumbersome it was easy to ranlicate tection equipment in this instance, computer systems. Complex net-works, both local and remote. link as well as a consequence of severe weather conditions or a plumbing failure. Other accidental causes in-Powerful communication clude earthquakes, mud slides, structural collapse, power failures, human error or vandalism. ends, advanced telephone switch-es and the telephone company plant all interact. Rebuilding the network can be as his a job - or

These dangers or hazards repre

cont a threat or sick of lose to a business and its computer center. The reason for disaster recovery

lanning should be clear Calami ies can and do occur that render the information resource systems inonerable. The failure of these systems can destroy a company. No management information systems (MIS) director has the authority to take that kind of rick and no new dent executive would want to

Why have so many companie avoided occurring for a disaster The answer stems from confusion Composite do not prito such obor every day and are unsure of bow to on about it. Most companies un derestimate the effort involved in such a complex task. Other compa nies try to get started, but make a false start. Little progress is mad

and the planners get discouraged. However, disaster recovery planning is like insurance, and no company availed allow their insure ence policy to lence The evolution of new informs tion processing technology makes

the need for disaster recovery planning much more acute. Even companies with thought out disaster recovery plans are finding out that those

plans are becoming obsolete as in-formation processing technology expands throughout their preani Communication networks are an obvious example of how tech

Today, users are on-line to their

sers and computers together

nology is complicating disaster re-covery planning. In the days of batch data processing, after the data was stored at the data center • Protective Reaction — as di the job was done. The input and output were picked up and delive Recovery Reaction ately after the danger.

 Recovery Operations — oper ng critical syste Normalization — return to

Using a fire as an example helps to provide a simplified overview of how this disaster recovery plan might work. The first phase, preparation, is analogous to having established exit routes and having held fire drills. Protective reaction involves the actions needed to

Digributed data processi reuns that important information from the corporate DP center there may not be the same care

hanner or rebuilding the abovi

cal facility

might be dispersed to computers roughout the company. about backup and recovery. The old saying, "Out of sight, out of nees if a disester occurs damaging that remote computer.

Personal computing and word

processing raise another new risk.
The users of such products are not
of the DP department Who, among user departments, is insur-ing that specialized programs and critical information is being backed up? Are onocedures being backed up? Are procedures being written so that personal computer functions can be performed if the primary user is not available? How will the confidential information and personal programs that are on diskettes sitting in desk drawers be replicated in the event the company's building is burned down? This is already a problem in some com panies and it will have devastati impact as intelligent workstations sweep through offices during this

These technical changes re quire new ways of managing infor-mation resources. It would be na-ive to think that they do not impact saster recovery planning.

There are five key phases in di

saster recovery Preparation — anticipating

mize injury and damage dur ing the disaster, in this example, people leave the building using their assigned evacuation routes

Recovery reaction is the immediate assignment of individuals into proestablished teams to assess the extent of the damage and to implement those portions of the plan that will put critical functions

back into operation quickly. Se-covery operation is the operational mode under which the company's business is transacted until com-plete and normal operations can be restored. The final phase is the be restored. The final phase is the return to permanent facilities and normal operation. In addition, some would formally recognize a sixth phase whereby the recovery

sixth phase whereby the recovery plan was updated. Extending that analogy to infor-mation processing, the first phase is the step where provisions are made, including the writing of the disaster recovery plan. Activities for each of the next four phases is detailed in that plan.

Phase two, protective reaction,

Phase two, protective reaction, is the positive action that takes place while a disaster is occuring. The primary purpose of this phase is to protect human life and to limit physical damage. Without a planned response, the chaos from the disaster can be more harmful than the disaster itself. The shuting down of equipment and the examples of appropriate protective measures.

examples or appropriate procedure. Phase three, the recovery teaction, picks up where the second step ends. Employee teams ascess the damages, institute recovery percedures, and begin building critical processing functions. If the its where the off like to opies to programs and data are sent to an inter-in operations corner. Hardware and software resources, communications, facilities and people are brought together. The corporate sames is a sent to a programmer of the comment of the control of the comment of the control of the control of the comment of the control of t

Phase four, recovery operations, is the period during which the data

processing function is performed using temporary facilities. During this time, processing should be or-derly. Critical functions are processed routinely without speci

management attention. Once the occasing routine has been each processing routine has been essa-lished, attention can be focused on establishing a permanent data cen-

r. Normalization occurs when data processing returns to its perma-nent location and all information nent location and all information systems are restored. The evolu-tion to normalization includes a conversion of processing from the interim processing center to the normal data center. Everyone has been through a conversion, and this conversion is no different. It is a big job and must be managed well. As part of normalization, the disaster recovery plan would be updated. The success of each of these phases depends on how well the preparation was done. "Be pre-pared" is a motto well worth

pared is a moto well worth adopting. The front pared is a disposing. The free yellow is understanding what applications are critical to the organization. An application in system and a risk analysis per formed on each one. Priorutes are you on each systems. Sperifical in phasis on the wrong applications. Payvoll neems like the most obstitute and the pared in a dissaster in ship to pisosible to write cuitinated payvoll exemised to the control of the payvoll neems like the most obstitute in a dissaster in ship to pisosible to write cuitinated payvoll checks of the payvoll neems like the possible to the control of the payvoll neems like the most obstitute of the payvoll neems like the most obstitute of the payvoll neems and the payvoll neems and the payvoll neems like the payvoll neems and the payvoll neem

od registers.
Other systems such as the re Other systems such as the royal-ty payment systems found in the energy industry and order entry systems in the distribution indus-pages. In the control of the con-may have much greate priority. Both quantitative and qualitative factors must be considered have been defined and their pitotities established, it becomes possible to specify the programs and data to be safeguarded, and so what level. In addition, alternate processing is

facilities and recovery operation centers can be intelligently evalu-ated. Mutual aid agreements with other user companies can also be considered, but formal written

agreements are needed.

At the same time, policies and At the same time, policies and procedures are written for data processing staff and for users so that each knows what is expected when disaster strikes. Training is an essential element. A detailed manual is prepared for each work ing group. Everyone must react in a prescribed way when a catastro-

Personal com

uting and word processing raise another new risk. The users of such products are not of the DP department. Who . . . is insuring that she cialized programs and criti-cal information is being backed up?

phe occurs, otherwise chaos will

pite fecture, described the users if the headquarters building is demoished it is not good enough just to restore processing. How will users access processed dazis peneded during recovery operations, I/O methods will change. Some business functions will rever to manual methods. How will rever to manual methods, flow will rever to manual methods. How will receive the process of t

tive.

After the disaster recovery plan is completed, it must be tested. The test must simulate a real disaster as closely as practical without the costly interruptions that would occur had a real disaster taken

phon place.
The internal auditor plays an important role as an objective evaluator of the test results. The internal auditor must also insure that the disaster recovery plan is kept up to date with changing technology, user application and business

Fully Operational Service Centers

Arbet System Arbet Plaza Hoboken, NJ 07030 (201) 963-4440

Comdisco Disaster Recovery 6400 Shafer Court Rosemont, IL 60018 (312) 698-3000

Disaster Control 555 Goffle Road Ridgewood, NJ 07450

Neshaminy Valley Information Processing 4850 Street Road Trevose, PA 19049 (215) 322-2285

Cadre P.O. Box 687 P.O. Box 687 Avon, CT 06001 (203) 674-1285

Computer Alternatives 200 N. Michigan Ave. Chicago, IL 60601 (312) 977-7500 Hawthome Computer Service 1234 Market St. Philadelphia, PA 19181 (215) 988-8000

Remote Computing Corp. 1076 E. Meadow Circle Palo Alto, CA 94303 (415) 949-6111

Sunguard P.O. Box 13912 Philadelphia, PA 19101 (215) 972-4219

Combac Management Corp. 1110 Finch Ave. Toronto, Ontario M3J 2T2 (416) 665-5995

Computer Research Co. (Failsafe) P.O. Box 1138 Doylestown, PA 18901 (215) 355-7800

Litton Mellonica 6701 Variel Ave. Canoga Park, CA 91303 (213) 887-5100

Software Research Co, 140 Gold St. Needham, MA 02194 (617) 449-5310

Shell Sites

Data Shield P.O. Box 242 Greendale, WI 53129 (414) 421-7710

Data Processing Security 200 East Loop 820 Fort Worth, TX 76112 (817) 457-9400

Emergency Computer Center 10012 Darnell St. Lenexa, KS 66215 (913) 888-6200

National Processing Co. 1231 Durrent Lane Louisville, KY 40285 (502) 581-4281

Wastern-Southern Life Ins. P.O. Box 1119 Cincinnati, OH 45201 (513) 629-1800

Data Site P.O. Box 907 Greenville, RI 02828 (410) 949-1090

Eloigne Corporation P.O. Box 26312 Minneapolis, MN 55426 (612) 644-7587

Mertin Merletta Data Systems P.O. Box 13990 Orlando, FL 32859 (305) 855-1050

Recovery Centers of America P.O. Box 120122 Nashville, TN 37212 (615) 329-4422

Wright Line/Iron Mour 160 Gold Star Bivd. Worcester, MA 01606 (617) 852-4300

onment The external suditor also has a role to play as an impartial, outside observer. On the other hand, the auditor cannot become enmeshed with the development of the plan without endangering the plan's objective as well as the independent frame of mind pend ed to evaluate the finished plan of

There are several misconcers tions and mistakes that are often made in disaster recovery plan-

ning Cookbook Approach — Disaster recovery planning is very specific to the business, technical and organizational environment of the company. A cookbook approach, which infers a general step by step way of doing the job, doesn't work.

Although there are certain sters which every company must follow, the systems that are essential for survival in one company may be luxuries to another firm.

The "Solution First" Approach

— Many companies become enamored with evaluating disaster recovery products and services alter-nate processing facilities, reserve nate processing facilities, reserve operation, centers, empty shells, mutual-aid pacts, backup storage sites and so on. All too often, the recovery approach is decided be-fore the real needs are assessed. Trying to mateh problems to a sol-uation is backwards. Assess the site unation, evaluate the risks, establish autonic resultant the risks, establish

uation, evaluate the risks, establish evaluation criteria; then study the alternatives and make the selection that best meets that criteria.

Neglecting the User—Risks can neither be analyzed nor can priorities be established without the nes be established without the close consultation of management and end users. The final plan is not implementable unless recovery procedures and manuals are avail-able to the users. Furthermore, usable to the users. Furthermore, users must be part of the ongoing testing of the plan.

The Static Plan — The "do it once and then admire it" approach

to disaster recovery planning is the worst possible choice. Information ing is changing in every orwith frequently if your organizaand realistically

An out-of-date plan will proba An out-or-case pain win proxi-bly fail in an emergency. The cost for developing the plan has been wasted. Worse than that, there is a wasted. Worse than that, there is a false sense of security. Such plans must be dynamic and usus be kept current. When the play is updated as part of ongoing development, it becomes a routine part of every

perion

oject.

Doing Nothing — The ostric never escapes danger by sticking his head in the sand, and one can be sure that the ostrich is always blind-sided when disaster strikes When you don't have a pian, you which you don't have a pain, you are playing a dangerous game in which the odds are stacked against your company. That is a risk that is avoided by prudent and diligent businessmen Unmanaged Planning - Many

disaster plans take too long, cost too much, or are never completed because of mismanagement. Disasbecause of mismanagement. Disas-ter recovery planning is a major (but not Herculean) project. Its development must itself be care-fully plannech Milestones must be established and tasks must be assigned. Progress must be moni-tored. Management must demand results

results. Lack of Resources — Good planning and monitoring is essential, but not sufficient by uself. The right people and the necessary resources must be assigned. The proceed manager must have the right combination of business, technical and disaster planning skills. And the planning effort must be his first priority.

priority.

Fanaticism — Beware of the d Fanaticism — Beware of the di-saster recovery planning effort that looks like a Cecil B. DeMille ex-travaganza — "A cast of thousands, ten years in the making . . . " A complete plan is necessary, but do not lose sight of practical consider-

protected in the event of a calami ty. Such a plan is necessary be-cause of the importance of information and communications in the modern business. As time goes on. we will become even more reliant on computerized information systems. The technology is becoming more dispersed so that careful planning is all the more important.

Anything less is negligent. are logical. The current ituation is analyzed and critical systems are identified. Detailed plans are made and documented plans are made and documented so that critical functions can be re-stored in order of priority

stored in order of priority.
The whole project is performed
with a focus on meeting real corporate needs. Product selection
comes only after those needs are
understood. Actual testing of the
plan caps off the development effort and provides an important
quality control check. Once developed, the plan is maintained to en

re that it is current The likelihood of a serious com The likelihood of a serious com-polier outage in any one congany in any one year is slight. However, for a successful company, a com-polier catanity is jutimately inevita-ble information is a valuable asset and it must be protected. If you al-ready have a plan, establish the mechanism of be sure it says cur-era. If you do not have a plan, it is not too late to begin, but begin soon. Once a dissourt surkes, it soon. Once a dissourt surkes, it was been a plan to the plan in the plan in the like too late for you and per-haps for your company a

Gary Tarkington is a consul-nt with the Information Man-tement Division of Walter E U-ch Consulting, located in ouston, Texas. He has 10 years of sce in data process

planning.
Walter Ulrich is president of
Walter E Ulrich Consulting. He is
a frequent speaker at information
processing conferences and seminars and a leading expert in computers, communications and offee necessing.



THE MICRO PARADE THE MICR

By Esther Dyson

The first thing to understand about personal com ters is that no system is perfect; you are looking for a personal computer that suits you. If one system was clearly better than all the others, you would already know about it

The first thing to do in the selection process is to determine how the system will be used. Will the personal computer be used by one person or will it be shared? Will it be hooked into a mainframe or a commercial data base? What applications will be per-formed on the machine: word processing, spreadtormed on the maximie: wou processing special sheets, flustrated texts, durning letters, customer account management, sales analysis, phone list maintenance or several of these together? How often will the systems be used — all day or for frequent five. minute systems be used. — an tay of for frequent free
minute stretches? Will telephone management be incomporated into the system? How much data will be ored on the system

Somewhere in the world there may be a personal computer that precisely meets your needs. Unfortunately, there are so many it may be difficult to find the one that's just right. Even worse, it may come in little pieces: Company A's CPU, B's disk drive; C, D, E and F's software; and Dealer G's support.

F's software; and Dealer G's support.

The dealer who sells the machine can be the kingpin in helping a user select and fit together all the diverse components of the system. He should be ready,
willing and able to fix any problems, whether they be
a new piece of software or a disk drive overhaul.

The major news in hardware these days is 16-bit microcomputers. This architecture offers the capacity to handle more data and far more complex programs than the traditional (since the late 70s) 8-bit architec-ture. Eight-bit machines, such as the Apple Computer, Inc. Apple III, can actually be very sophisticated, sup-

porting hard disks and multiple users, but all other things being equal, a 16-bit machine is probably pref-erable. Most of the interesting new software available is written for 16-bit machines — in particular for the is written for 10-bit macritines — in particular for the IBM Personal Computer. Several firms now offer a variety of 8-bit and 16-bit

Several firms now offer a variety of 8 bit and 16-bit machines. Some, like Dipital Engineme Copy is Rainmachines. Some, like Dipital Engineme Copy is Rainone of each, enabling them in oran both kinds of sohwer. Add in cards, such a Microsoft Copy is Softmard.

New 2 bit of the Copy is Softmard.

New 3 bit of the Copy is Softmard.

New 4 bit of the Copy is Softmard.

New 5 bit of th

Theoretically a personal computer could have un-timited external storage, but in practice most systems now have two floppy drives, and frequently a hard disk drive as well.

disk dive as well.

With 1BMs announcement last March of the XT,
which comes with a 10M byte hard disk, there has
been an enormous gain in the popularity of hard disks.

Should your computer have a hard disk? Certainly it is
an enormous convenience, albeit an expensive one,
as £2,000 to 33,000 a unit. Having a hard disk Certainly is
mate the need to keep rawapping (et a lone keep track
of) a collection of floppy disks (although it's wise to
secre each day's work on a floppy disk by not for back-up

purposes).

Besides overcoming capacity limitations and disk-swapping required with floppy disks, the hard disk

-



PARADE THE MICRO PARADE

also has much fuser access time. Five seconds we half a new five second peny but a new for second peny but a new five second peny

for the large array of CP/M-based machines. However, most of the newest, broadest featured software is now being writen for the 16-bit Personal Computer, running under PC-DOS, IBM's operating system for the mechanic

amenting whether hot the first restolat Compare, meaning whether hot the first resching mean for the first mechanic.

All of the hot new ordinate—much as Louis Development of the first white white of the first white of the

of a females of the Park and the shore outomatically undates recognis automatically update viewende the reference

Another form of integration al lows the user to look at different core of their completeness at the for or ample seeing parts of pages two and three of a single document or and thee of a migre document of ten and the sales report heing guerad from in different name of the screen. These different views are called wandows and are carelly becoming a fashionable feature of the newer systems

Integration has been getting a lot of press jately, for obvious rea All the major productivity package players - Visicorn. Mr. crosoft. Sorcim Corp., Information Unlimited Software, Inc., Micropro International Corp. Peachtree Software, Inc. — are touting it. convenience soon becomes a ne-There's Apple, whose last system CONCERN is so integrated that it comes com plete with hardware. Finally, there is a bost of "environments nack ages that incorporate several sepa rate applications and integrate them The most comprehensive of those is Visicoro's VisiOn an nonnoed for the Personal Compan er last November and to be avail able this October with adaptations for the DEC. TI and Wang Laboratories. Inc. profes sional computers to follow

With VisiOn and the related an attentions (which Victors will supply although other windows are also being encouraged to write packages for the VisiOn environ lower price. ment), the IBM micro will offer nost of the same features as Lisa at a lower cost and on a more familiar

Other contenders in the integra tion race will include Microsoft. Micropro and Digital Research. with full-featured products not yet unced. Meanwhile. Quarter Systems will offer which provides for some data isfer among applications and a lot of commonality in the user interface. Alpha Software Corp., with its Data Base Manager II, provides a complement to Desg, allowing

annlautions Is all this integration necessary

for your it depends on how you in tend to use your personal comp er. If only one function is needed er it only one toocnoil is needed, good word processing package is all that is required. If several functunes are going to be performed tions are going to be performed data abarrage a set of integrated sp. alcontrol from the come reader or the set of popular applications linked by a data transfer package. will probably be the best portion But if tasks are being cor shifted from one to another, and non would like to look at a lettle while modune on a rales plan something like the VisiOn package or the Lisa system is appropriate. But remember, what starts out as a

TRM's Personal Computer

Several currently available systerms are popular examples of what is on the market today. The most significant trend these days is the supremacy of the Personal Comnotes which endomizes security and vendor reliability. Next is Appie's Less on innovative, excit machine from a company that still ves some old line DP managers hives. Then there's the Ti Professignal one of the many MS-DOS machines that's fighting IBM by of fering exten features as well as a

with the hersonal Computer be-cause most of the good software is being written first for the IBM Personal Computer, and for every Personal Computer itself is a solid, Intel Corp. 8088-based machine. with a list price which was recently dropped 15% to \$2.633 (for the two-disk version). Corporate put chasers who buy in volume, more over, can usually negotiate a dis-count of up to 30% at 250-plus quantities from a local dealer or even from IBM itself. The basic

system comes with 64K bytes of

The user cannot go too far awry

and the same making (BAM) the XT score with 128K RAM and includes a 10M-byte hard disk for \$4 995 For most personal uses this is ample. There is a wide range of software available for the system from 1BM and third-pany sources, including later this year VisiOn which will make the personal com nutur almost an accompliant of the

The Bersonal Communer's chief flaw is 'probably its relatively low power commpared to all the other Motorola 68000 based machines But most personal computer users are more concerned with the quality of the software they use than with its execution speed. Another failing is the lack of a good, standard network system, but that's an issue now being addressed both by IBM itself and by a host of add-on dors such as Tecmar. Inc.. Visi corp and 3Com Corp What more needs to be said

about the IBM Personal Computer? It is the standard entires which all the others are measured And a comes with IBM's name and the assurance of support from a dealer carefully qualified by IBM or from

Apple's Lisa

The Lisa is Apple's new flagship muchine and was introduced this pust spring. Priced at \$9.995, it in cindes a hard disk (Apple's famil iar 5M-byte Profile) and everything

else but the printer. Lisa uses Motorola's powerful 68000 16-bit chip to provide an extremely flexible, comprehensive single-user system that's accessi his to the nurice Most of its sound al annications (word processing graphics and so on) can pass data from one to another and several files can be seen on the screen at be same time through the use of

Lisa operates like a desk top on a screen, with tools and files all neatly laid out. Rather than being stored in an inaccessible com file that can only be called

the mark of the district of the condisplayed permanently at the edge of the screen so that the user sees immediately what's available tike wise, the tools are visible — mail box wastebasket clock populati and calculator. The user can enter data and text in the normal way through the keyboard, but maning lates them with a mouse, using it to select documents and text or data select documents and text or data from available documents and the bard dick

fuentians from a mide and and Except for Lisadraw and Lisa project — which are virtually unri valed and put the superb graphics of the monochrome 12 unch bu of the monochrome 12-inch on manned display (720 by 364 pix els: about trace the recolution of the unimproved Personal Company er) and dot matrix printer (\$695 extra) to good use — Lisa's appli cations are pedestrian versions of standard functions that have been done better elsewhere It is only their integration with each other (such as it is) that makes them unique - for the moment

But this is a uniqueness most very long or deeply at one task, but rather shifts around and needs a flexible system that will accommo

In contrast to its Xerox progenitor, the Star, which can be only as part of a network, Lisa at present is limited to stand-alone operation (with optional remote cannot share resources with other machines. However, the company has recently announced a joint de velopment agreement with Cul-linet Software, Inc., which will reportedly give Lisa easy access to most mainframe data bases some

As noted, Lisa costs \$9,995, An equivalent Personal Computer ht start at about \$6,000 with a 10M-byte disk drive, but its inter-nal memory still limited to 512K

on top of that, the user would have to add applications and Vi-siOn, with mouse and interface, for a total of approximately \$7,000

or \$1000 But it's not just cost that's the is sue Regardless of the cost the risk applies to the entire system in the case of Lisa to the software only in

the case of the IBM Personal Com the case of the 10st resonal conmake property may already have Personal Computer and some add ons. so all they have to do is hus the VisiOn software and mouse And if they do not like it they have the Personal Computer and

The TI Professional Texas Instruments appounced its version of the proliferating professional computer" last soring With some encourement TI many software houses have already transported their Per sonal Computer software to the TI Professional, which runs on Micro-soft's MS-DOS operating system lose to the PC DOS, but not quite close enough to obviste software conversion. Still, there are a lot of announced packages that are not yet available, so it's wise to con firm software availability before

putting money down for the sys The system comes with a full as

w of features and a price (\$3,145 for the two-diskette version, it ding a monitor and \$700 worth of free memory added in response to IBM's 15% price cut) that makes it attractive heside the Personal Compatter Ite 8000 chie enable the system to non MS DOS TI also offers, for an extra

charge: CP/M-86, Concurrent CP/ or the UCSD p-System. E yond that, the machine sports 64K ytes of internal memory. able to 256K bytes; a 320K-byte disk drive, with room for a secon or for a 5M- or 10M-byte Winches ter; a 12-inch monochrome 720-by 300 pixel monitor; and a five-slot

However, TI has also promi two extra features for the Profes sional that should make it more than just a pale copy of the IBM Personal Computer. These prom-ises both have to do with this year's

huzzword; the user interface.

chin for this standard adhering mane, the company has put techni cal virtuosity to good use by offer ing speech recognition (when most competitors offer only speech output or recording). The system's voice management sys tem, scheduled for delivery in the third owner of 1983 will include atic disting telephone more sage store and forward telephone ring and word recogn

The electronics, which includes several T1 microprocessors. 328 bytes of RAM. IK byte of read-only memory (ROM) and some tele phone interface circuitor all fire onto two boards that take up only a single expansion slot. The system will recognize up to 32 words as spoken by a single operator, once it is "trained" by that operator (This information is stored on a

disk, so a second person could use another disk or the operator could use several disks with different 32-word vocabularies.) These words can be integrated with any applica tion so that the user could, for ex ample, command Multiplan to

Then there's the natural lan uage interface, also scheduled to This consists of a menu of sen Inis consists of a menu of sen-tence fragments designed to make the user think he's constructing a sentence that the computer can understand. In fact, the user is seecting a series of commands and lecting a series of commands and options and filling in an occasional blank with a value the system works on the same principle as a foreigner walking into a French restaurant and pointing to the ap-propriate phrases in his guideropriate phrases in his guide ook. He can ask any question he wants - as long as it's one precon ceived by the system Currently the system uses cursors and keys, but the system is clearly well-designed to work with a mouse.o

Dyson' is president of Ro search, Inc. and editor of "Release 1.0", formerly "The Rosen Elec

Explore the software universe with the Computerworld Buyer's Guide to Software.



Technology Architecture



Keeping the Future In Perspective

What is clearly needed in today's high-pressure information systems environment is a framework for providing the selection and implementation of information systems resources — hard ware, software and personnel effectively and efficiently, while still allowing for future business requirements and advances in technology.

Such a framework, often referred to as an information systems By G. Michael Ashmore

architecture, is designed to refle
a the values of an organization wa
regard to operational efficient
(such as cost, management on
plexity, use of operation and
on). In addition, the informatic
systems architecture provides f
changes in installed technologia
and the introduction of new tec
nologies where they can suppe
the thrust of the business.

Understanding the need for an information system architecture is one thing developing one is quite a different matter. Most of the methods of producing such as a quite a significant investment. The complexity is not due to the technical principles that are employed, such as understanding how information is used, but in the depth of the information that has to be gain-end. For example, gathering data

- INFORMATION SYSTEMS ARCHITECTURE METHODOLOGY -

INDIFFE MAJOR STEPS INPIETS DEFINE BUSINESS RUSINESS ACTIVITIES AND DIRECTION INFORMATION SYSTEMS OPPORTUNITIES IDENTIFY TECHNOLOGY TECHNICI OCY OPTIONS FOR EACH DIRECTION INFORMATION SYSTEM OPPORTUNITY ANALYZE OPTIONS SERVICE STRATEGY DOCUMENT IN TERMS OF CURRENT DELIVERY PLANS IMPLEMENTATION ARCHITECTURE

COSTS AND

ORGANIZATION VALUES

EVALUATE OPTIONS USING ORGANIZATION VALUES AND SELECT ARCHITECTURE

- METHODOLOGY INPUTS -

BUSINESS DIRECTION

Description of the business, its functions, activities and anticipated changes, Identifies areas in which information systems are required or highly useful. Technical resources capabilities, trends and likely innovations. Existing resources and the services they provide.

TECHNOLOGY DIRECTION CURRENT ARCHITECTURE SERVICE STRATEGY Information services to be supported, user base and service . objectives

> DELIVERY PLANS Application and general service design details and implementation plans.

INFORMATION POLICY

Data Bases and high level data flow, Information usage and control policies.

ORGANIZATIONAL VALUES

Values with which the organization makes decisions and determines success.

on transaction volume may be is on transaction volume may be in relevant to a centralization/decen tralization issue if control or response time requirements are

sufficiently stringent In recognition of this problem, Index Systems, Inc., has formulated an undated approach to the information system architecture This approach focuses on evaluating the functions performed by th business and the values which the organization uses to ludge the per formance of its operation. As a re-sult, the methodology distinguishes itself in three critical wave from previous approaches Fier business direction is used to determine information system opportu nities. This insures that the result ing information systems

the direction of the business Secand technical capabilities are ana lyzed in terms of business impact. but only as they relate to the defined business direction. For example, if an opportunity for introducing word processing capabilities is identified, technical specifications for the equipment are examined and translated into pertinent business considerations. such as functional impact, quality

and cost The third and perhaps most im portant approach involves apply-ing the values of the organization to the tasks of defining the archi-tecture, which reduces the amount of information that must be considered and therefore streamlines the entire process. This process results in the identification of those criti-cal components (such as cost, control or risk) which drive technical resource decisions. In most organizations, the number of such components is small, necessitating little, if any, information gathering As a result, the information system architecture can be developed quickly and efficiently.

An information systems archi tecture methodology consists of

Descriptions of the steps to

be performed

 Guidelines and instruction for performing each step.

A definition of the resulting work product

olk product.

The first and third componer are based upon technical principle and logic that has already proven effective in other information system architecture methods Con-

ently, this method does not differ significantly from previous approaches in either of these areas. Where the methodology intro duces a new twist is in the second component that is in the way in component; that is, in the way in which essential steps are performed. By identifying the vi of the organization as they relate to the introduction and use of information systems as well as by using these values to analyze hardware software and personnel options, the methodology requires detailed information only when it relates directly to the decision-making process. As a result, the amount of detail necessary for construction the information system archite ture is simplified and shortened. As illustrated in the chart on page 58, the information systems architecture methodology requires

that the following steps be con-Prepare a high-level description business activities and functionof but al requirements for the planni

time frame. Define information systems opportunities that support these requirements and potential improvements in efficiency or ef-

improvements in efficiency or ef-fectiveness of the organization. For each information systems opportunity, determine the hard-ware, software and personnel op-tions. As appropriate, include op-tions based on anticipated new technologies and improvements in xisting technologies. Document the existing inform tion systems, focusing on the capa-bilities and services that are or can

be provided be provided.

Analyze each technical resource option in terms of what it takes to get there — the cost, time, risk and level of effort involved — and what it means to be there (control,

productivity, responsiveness). Using these values of the org using these values of the orga-nization, evaluate the options and select the option which best fits the organization. This option becomes the new information sys tems architecture and is the target

for subsequent technical secon desistant The performance of each step in the order specified guarantees that the framework is aligned with business direction, takes into ac-

is consistent with the values and objectives of the organization

The third and Dérbabs most important apperoups most important the values of the organiza-tion to the tasks of defining the architecture, which reduces the amount of information that must be considered and therefore stream lines the entire process.

The core of the updated information system architecture methodology is its recognition and use of the values of the organization. These values provide implicit direction for identifying information. The control of c The core of the undated infor

hand.
How does this work? The initial step in the technique is tied intrinsically to the business what activities occur, how is each performed, and how effectiveness and efficiency are measured. If all of these clements are known, technology elements are known, technology support and business factors that are important to the activities. A technology opton is considered if

and only if it works and if it improves the effectiveness and efficiency of the function in those areas of the husiness that are highly valued.

valued

In practice, this reduces the numbers of technologies that must be considered and can, in fact, specify particular resources. For example, an information systems opportunity for remote on fine data entry that requires local edit cambility and print response to

capability and rapid response to achieve productivity benefits may necessitate intelligent terminals I data manipulation requirements are added, with the same response

are added, with the same responsetime needs, microprocessors may be warranted. Cost, risk, available software and similar factors can further limit the options by restricting the choices of acceptable windows or devices.

The process of choosing between options is similarly influenced by applying the values of the organization. Detailed information is required only in those instances in which it is critical to the evaluation. For example, if cost is the driving force, documentation of transaction obtaines may be

necessary to select between a disinhured solution and a centralized processing option that includes remote terminals. This same data may not be necessary if the need for strong, local control dictates a distributed data processing strate

Looking across all technology options, the values of the organization usually require selected detail from the following areas.

- Service strategy
 Delivery plans (including ap-
- plications plans).

 Information policy:
 Pach of these areas is described.
- Each of these areas is described with a phriefly in the chart on page 58. It is let important to recognize, however, and that the complete collection of inference of the complete collection of the formation is seldom, if ever, reslet quired for the process and that the information that is required is of
 - ten already known within the organization.

 In summary, the technique preserves principles established by other methodologies, while reducing the amount of information that
 - must be considered.

 An information systems architecture is a framework for deploy-

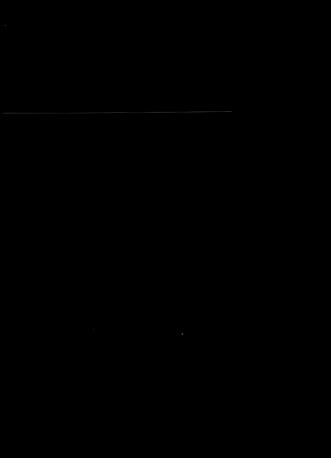
- ing technical resources (meaning hardware, software, and information systems support personnel) to meet current and anticipated future business needs. The architecture addresses the following questions explicitly:

 Which technologies are right
- for the husiness?

 Which information systems resources best provide the re-
- quired services?

 How should those resources
 be deployed (where are the resources located, when are they installed, how are they connected
 and who manages them) to deliver
- se medded capabilities?

 The architecture takes the form of a description of the services to be provided, the technical research of business site and the connectivity as between sites and the connectivity as the connectivity of the connectivity o
 - Ashmore is a principal at Index Systems, Inc., a consulting firm located in Cambridge, Mass



Magazine

VENDOR PROFILES WITH PRODUCT INDEX

	Consular Manufactures	ADVANCED MICRO DIGITAL	ALSPA COMPUTER, INC.
CCELERATED DATA		CORP	300 Harvey W Blvd
INT Bordeaus	Net Sales 55 Millon - \$25 Million		Santa Cruz CA 95060 (808) 429-6000
	1960	Conden Grove CA 92644	(408) 429-6000 Major Market Computer
	Contacts	(714) 891-4004 Marc Market Computer	Manufactures
	Head of Marketing Sales Donald	Manyfacturing	
	Walett Head of Software: Ron Eichton	Target Industries: OEM	Integrators OEM
ysteres House (DEM)	Head of Software Hon tuckton Head of Customer Service Rick	Target Applications, General	
arget Industries Scientific	Perry		Head of Sales Richard Brooks
rigineering erget Applications: CAD CAM	Geographic Coverage: International	Net Sales: \$1 Milion — \$5 Milion	Head of Engineering Steven Rupp Head of Customer Service Dennis
eographic Coverage, International			
eer Established 1960	Number of Employees 600	Contacts.	Henring Geographic Coverage: International
		Head of Sales Al Baghen Head of Engineering Alonzo	Yanr Established: 1960
CCESS MATRIX CORP.	ADAC CORP.	Contents	
159 Benng Drive	TO Tower Office Park	Geographic Coverage International Year Estatement 1960	ALTOS COMPUTER SYSTEMS.
an Jose CA 95131	Woburn MA 01801	Year Fetablished 1960	INC.
106) 263-3660	617) 935 6668 Major Markets: Computer and	Number of Employees, 75	2681 Orchard Park Way
Sept Market: Computer Socifectures	Peopheral Manufacturing OEM		San Jose CA 95134
Contacts	Computer Systems	AKI, INC.	(406) 946-6700
			Major Market Computer
lead of Customer Service Doenie	Target Applications Data	Arington VA 22180	Manufacturing
			Target Industries OEM Target Applications General
Lenguages Coverage International	Net Sales: \$5 Million — \$25 Million	Major Markets: Computer	
		Manufacturing OBM Computer	Net Selex: \$25 Million — \$100
umber of Employees: 100		Systems Target industries: Publishing	Meon (1981)
	Head of Marketing Allen Pollens		
CTION COMPUTER	Geographic Coverage International	Printing Contacts:	Head of Marketing Max Saleton
ENTERPRISE 55 W Del Mar Bled			Geographic Coverage International
SS W Del Mar Blvd Passatern CA 91105	ADVANCED DIGITAL	Geographic Coverage: Regional Year Established 1960	Year Established 1977 Number of Employees, 375
2131 793 2440	1250 Upon St	Year Established 1960	Number of Employees: 30
Major Market: Computer	Sun Desp CA 92101	Number of Employees: 15	AMDAHL CORP.
	San Dego CA 52101 (714) 533-0103		1250 E Arbus Art
Net Sales: \$1 Million - \$5 Million	Major Markets Computer	ALBERT COMPUTER, INC.	P O Ben 470
1981)		3170 Los Fetz Deve	
Contects		Unit C	
Head of Software Herb Segel		Thousand Daks. CA 81762	Major Markets: Component
Head of Engineering Kwok Ong	Contacts	(905) 467-1073	
Geographic Coverage International Year Earablished 1979	Head of Marketing Sales D.A.	Major Market Computer Manufacturing	Communications Equipment
Number of Employees: 40	George	Contects:	Manufacturing OEM Computer
Number of Employees: 40	Head of Software Barry Demchak	Head of Manustring Kenneth Siger	Systems, Software House Death Distributor
ACTION INSTRUMENTS CO.,	Geographic Coverage Instrustional Year Established 1981		Manierance Other Services
inc.	Number of Employees: 30	Geographic Coverage International Year Established: 1962	Tweet Applications: Project
SHC. 8601 Aero Drive	Whates or Carbolines "	Year Established: 1902	
San Dego CA 92123	ADVANCED INFORMATICS.	Number of Employees: 45	Het Seles, More than \$100 Million
	LTD.		
Major Markets Computer		ALCYON, INC.	Contacts.
Manufacturing Software House Maintenance Other Services		8716 Production Ave	Head of Marketing William F
Maintenance Other Services Target Industries Menufacturing		San Diego, CA 192121 (714) 578-0660	O Cornel
Net Sales \$5 Milion - \$25 Milion		(714) 578-0660	Head of Software Fredrick M
1961)	Pergreral Manufacturing Software House, OEM Pergrerals Terminals	Neor Markets: Computer	Trapnet Jr Heart of Engineering Bruce Beebe
	House, OEM Perpherals Terminals	Manufacturing OEM Peopherals Terminals Software	Constants County of Bride Bellet
Need of Manustring Sales Chuck	Terget Industries Small Business		Geographic Coverage International Tear Established 1970
	Government Net Sales 51 Million — \$5 Million	Ternet Annications: General	Number of Employees: 5 300
Head of Software Harry Skizwrick)	Net Sales 31 Million — 35 Million (1982)	Target Applications: General Business Software Development	
Head of Customer Service Doug			AMF LOGIC SCIENCES, INC.
Hirvey		(1982)	
Geographic Coverage: International Year Established: 1970	Consenter Courses National	Contests.	10635 Rockiny Road
Year Established: 1970 Number of Employees: 200	Year Established 1974	Head of Marketing Lovel C Chase	Houston, TX 77099
Humber of Employees: 200	Geographic Coverage National Year Established 1978 Number of Employees: 57	Need of Software William Allen	(713) 879-0536 Major Markets: Computer
ACTU SYSTEMS		Head or porteure William Allen	Manufacturing OEM Computer
1160 Mark Ant	ADVANCED MICRO BEVICES,	Geographic Coverage: Interrutional Year Established: 1979 Number of Employance: 10	
	INC.	Manager of Specimens 10	
MON FRA 4602	Micro Computer Systems		Target Applications: Driplays Net Sales: \$5 Milion — \$25 Milion
Mager Markets: Computer and	Directorard	ALPHA MICROSYSTEMS, INC.	Net Sales: \$5 Milion - \$25 Milion
	3340 Scott Blyd Senta Clara CA 95051	17081 Street N	11962)
Target industries: Retailing	(408) 966-7777	17881 Skypark N Irven CA 92713	
	Macr Merkets: OEM Computer		Head of Marketing Sales Roger
Head of Marketing Jerry Davies	Systems Computer Manufacturing		Fuler
Geographic Coverage: Intervational Year Established, 1979	Target industries.	Nerstacturing Net Select \$25 Million — \$100	Head of Software Engineering John
Year Established, 1979 Humber of Employees: 40		Net Sales: \$25 Milion — \$100	Barugh Head of Customer Service Jon
Number of Employees: 40		Million (1962)	Head of Customer Service Jen
ACUREX CORP.		Coreste	repper
Autodata Division		Head of Marketing Richard Clive	Nagger Geographic Coverage: International Year Established: 1973
	Not Sales \$5 Million \$25 Million	Head of Sales Barry Dearborn	toumber of Employees: 35
	(1982)	Head of Engineering John Glade	
	Geographic Coverage: International Year Established: 1979	Geographic Coverage: International Year Established: 1977 Humber of Eropleyees: 290	AM INTERNATIONAL, INC.
Major Markets: OEM Computer			Vareyor Division

11 Mount Pleasant Ave	Number of Employees 2 800	Hisopinge NY 11787 (516) 231-5400
East Hanover NJ 07936 (201: 867 5000	ANDROMEDA SYSTEMS, INC.	Major Markets Computer and
Perpherais Terminals and Computer Systems Miscellaneous Computer	Canoga Park CA 91304 (213) 709-7600	Contacts Head of Marketing E Sheller
Supplies Corrector Manufacturing	Mayor Markets: Component	Head of Engineering William J
Target Industries: Photons		
Target Applications, Typesetting Telecommunications	Manufacturing Software House Systems House (DEM)	Head of Customer Service John Witherine
Contacts.		Year Established: 1909
Head of Marketino Richard M	Net Sales \$1 Million - \$5 Million	Number of Employees: 900
Flanagen Head of Sales O R Hughes	(1981) Coveners	APPLIED DYNAMICS
	Geographic Coverage Vicenational Year Established 1977	3800 Stone School Road
Geographic Coverage International Tear Established 1981	Number of Errolances 25	Ann Arbor Mt 48104 (313) 973-1300
Number of Employees 2 500		Mary Markets: Convincent and
	ANDROTEK/DNI	Computer Manufacturing
AMNET, INC. 101 Morse St	5569 Westerville Road Westerville, OH, 42051	Target Industries: Aerospace Energy: Automotive
Watersown MA 02172	(614) 862 7821	Target Applications Smulation Systems Transmission Design Net Sales: SS Million — \$25 Million
(817) 923-1850	Major Markets, CEM Computer	Systems Transmission Design
Major Markets: Computer and Communications Equipment	Systems Software House Computer Manufacturing	(1981) — \$25 Million — \$25 Million
Manufacturing CEM Computer		Contacty
Systems Software House Target Industries, Banking	Net Sales \$100,000 - \$500,000	Head of Marketing Edward Fadden Head of Customer Service Donald
Government Manufacturing Artines		
Target Applications: Pay-by Phone Account Balance information Payrol	Geographic Coverage: International Year Established 1973	Geographic Coverage: International Year Established: 1955
Account Balance Information, Payroll Net Sales; \$1 Million — \$5 Million	Number of Employees, 15	Year Established: 1955 Number of Employees: 53
(1961)	APF ELECTRONICE, INC.	Number of Employees: 63
	1501 Broadway New York NY 10035	APPLIED EYETEME CORP.
Head of Marketing John Whelen	New York, NY 10035	26401 Harper
Geographic Coverage: International Year Established: 1968	(212) 569-1960 Major Markets Office Equipment	St Clar Shores MI 48081 (313) 779-8700
Number of Employees, 75	and Computer Manufacturing	
		Computer Manufacturing, OEM
AMTEL SYSTEMS CORP. 1293 Anvivood Ave.	Merchandising Contacts:	Corrector Systems
Sunhyvale, CA 94086 (408) 734-5092	Head of Marketon Nei Loper	Geographic Coverage: Regional Year Established: 1965
(408) 734-5092	Geographic Coverage National Year Established, 1968 Number of Employees, 35	Number of Employees: 15
Major Markets: Computer and Communications Equipment	Year Established, 1968	APPLIED TECHNOLOGY
		VENTURES, INC. (ATVINC)
(DEM)	APOLLO COMPUTER, INC. 15 Elizabeth Drive	2921 S Dernier St Sente Anna, CA 92705
Target Industries: Fortune 500 Battern, Finance	Chetratord MA 01824	
Barring Finance Target Applications: Automated Message Counting Text Delivery		
Message Counting Text Delivery TWX Telev	Major Markets Component and Computer Manufacturing OEM	Manufacturing Systems House
Net Sales: \$1 Milion — \$5 Milion	Computer Systems	Terpet Industries: Hospitality Office
(1981)		Morrigion
Centacts: Head of Marketing Donald F	Terget Applications CAD CAM- Net Sales \$5 Million — \$25 Million	Contacts: Head of Customer Service Phil
	(1962)	
Head of Software Gary Wedenman	Contacts	Geographic Coresege: international Year Established: 1979 Number of Employees: 650
Head of Engineering Ernest I. Long Head of Customer Service David	Head of Marketing Barry Fiderman	Year Established: 1979
	Geographic Coverage International Tear Established 1980	
Geographic Coverage: National Year Established: 1978	Number of Employees: 500	ARC AUTOMATION EERVICE,
Year Established: 1978 Number of Employees: 30	APPLE COMPUTER, INC.	INC.
		219 Parameter Canter Plwy Atlanta, GA 30346
AMALOG DEVICES	Cupertino CA 95014	
3 Technology Way	(408) 996-1010	Major Markets: Computer
Rt. 1 Industrial Park. P.O. Box 250	Major Markets: Computer Terminal and Pengheral Manufacturing OEM	Manufacturing, Systems House (OEM), OEM Computer Systems
Norwood MA 02062 (617) 329-4700		Target Industries: Insurance Net Sales: \$25 Million — \$100
(617) 329-4700 Major Markets: OEM Computer	Target Industries: General Business	Het Sales: \$25 Million - \$100
Major Markets: OEM Computer Systems: Computer Manufacturing	Target Industries: General Business Target Applications: General Business Personal Entertainment	Million (1981) Contacts:
		Head of Marketing Chris Scattiff
	(1982)	
Terget Applications: Laboratory RSD: Measurement and Control	Contacts. Head of Sales Gene Carter	Head of Engineering Walls McMeth Head of Customer Service William
Product Testing Net Sales: \$5 Million — \$25 Million	Geographic Coverage: International	
Net Sales: \$5 Milion — \$25 Million	Geographic Coverage: International Year Established: 1975 Number of Employees: 3,500	Geographic Coverage: International Year Established: 1963
(1961) Connects:		Year Established: 1963 Humber of Employees: 900
	APPLIED BIGITAL DATA	
	EYSTEMS, INC.	ARCHIVES, INC.
Geographic Coverage: International Year Established: 1965	100 Margus Blvd	404 W 35th St .

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Diversion M. 50956
G19 1867-7400
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Mager Mankhist. Computer
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Happings NY 11797
(316/23) 5400
Mayo Mintels Computer and
Common Harduckumg
Common Harduckumg
Head of Manageria, Willem J
Catacomis
Head of Englanding Willem J
Catacomis
Head of Colomer Service John
Withcom
Yeer Established: 1999
Number of Employees; 900
                     Number of Employees, 900

APPALED O'MAMICS
INTERPANTOMA

3600 Shine School Road

3600 Shine School

3600 Shine

3600
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Keller
Geographic Coverage Tricinational
Tear Established: 1978
Number of Employees: 50
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Number of Deployees: 50
AMOSET COMPUTER
PRODUCTS, INC.
145 Pleadace 1
DOCOS Ferry NY 10522
DOCOS Ferry NY 10522
DOCOS Ferry NY 10522
Nocetamona Component and Component Manufacturing
Nacetamona Component Studies
New Select S1 Million := 55 Million (1841)
Controlled
Component Manufacturing
New Select S1 Million := 55 Million (1841)
Controlled
Component Component Nacetamona (1840)
Year Establishment: 1500
Nameter of Employees 50
Nameter of Employees 50
                     (1981)
Contacts:
Head of Marketing Edward Fadden
Head of Outstoner Service Donald
Chandler
Geographic Coverage: International
Year Established: 1925
Number of Employees: 53
                     A PPLAED E VETENE CORP.
26401 Harper
5.5 Cut Scroop, MI. 48081
5.5 Cut Scroop, MI. 48081
Major Markets Component and
Owner Markets Component and
Owner Markets Component and
Owner Markets Component and
Owner Markets Component Regional
Year Bashabarden 1955
Number of Employees: 15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Namine of Employees 50 A STROMATICE CORP. OF AMERICA OF STROMATICE CORP. OF AMERICA OF STROMATICE CORP. OF
Number of Employees: 55
APPLIED TROMOLOGY
VERTURES, INC. (A TYMIC)
2271 5 Densies 5
Sents Area, CA 22700
Manufacturing Systems Node
Manufacturing Systems Node
Manufacturing Systems Node
Montacturing Systems Prode
Contents
Conten
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           AUGUST 2 YSTEMS, IMC.
2737 1997 52.5 E
Sales, CH 97302
Sales, CH 97302
Major Mariest: Computer
Marchitecturing, Systems House
(OSM)
Target Indissense: Pharmacountry
Marchitecturing, Systems (100 000 000 (1981))
Centents
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Frederickson Geographic Coverage: Intern Year Established: 1978 Number of Employees: 50

keting Tom Garvey shed: 1981 (molevete: 100

NUTECH CORP.	Target Applications Order Entry.	Contactor	Computer Terminal and Pengheral
		Head of Marketing John Corry	Manufacturing OEM Computer
	Het Seles: \$5 Milion — \$25 Million	Head of Sales Robert Beaver	Systems Target Industries: Manufacturno.
05) 979 2750 auer Markets: Corrouter Terminal	(1981) Contacts	Head of Engineering Ken McCoy	
nger Markets: Computer Terminal and Pengheral Manufacturing	Head of Marketing Ray Dawson	Geographic Coverage: International Year Established: 1973 Number of Employees: 500	Target Applications: Process Control Factory Data Collection Net Sates: \$5 Million — \$25 Million
		Number of Employees: 500	Control Factory Data Collection
et Setes: \$1 Milion \$5 Million	Yaer Established: 1972	BTI COMPUTER BYSTEMS,	(1561)
981) ortecta	Number of Employees: 160	INC.	Contacts
ead of Marketing Marwn I. Burn	BARRETO A ASSOCIATES.		Head of Marketing Richard Fretwell
	INC.	Surreyvale, CA 94085 (408) 733-1122	Geographic Coverage: International Year Established: 1976
eographic Coverage International ear Established: 1968	1702 Broadway Sedina MO 65301	(408) 733-1122 Major Market: Computer	Number of Employees: 200
ear Established: 1968 umber of Eroployase: 75	Sedaha MO 653311 (\$15) 826 0689	Magazina em	
	Major Market: Computer	Marufacturing Net Sales; \$25 Million — \$100 Million (1981)	BURROUGHS CORP.
ATOMATIC CONTROL	Manufacturing	Milion (1981)	Diversified Products Group Burroughs Place
O Box 20264	Target Industries: Hotel Motel Contacts.	Head of Marketing John Nickerson	Detroit MI 48232
an Antonio TX 78220	Head of Marketing Greg Corper	Geographic Countrator International	
	Geographic Coverage: National Year Fetablished: 1961	Geographic Coverage: International Year Established: 1968	Major Markets: Computer Termina
	Year Established 1961 Number of Employees 5	Number of Employees: 350	Perpheral Communications Equipment and Office Equipment
Computer Manufacturing OEM Computer Systems Software House	Number of Employees 5	BUCK ENGINEERING, INC.	Manufacturing OEM Computer Systems, Software House
	BARRINGTON		Systems, Software House
	INTERNATIONAL CORP.	Rt 34	
	Suite 4 738 Amort Bird	P O Box 686	Maintenance/Differ Services Miscelamous Computer Supplies
Set Sales: \$1 Milion — \$5 Million	Arri Arbor Mt. 46104	Farmingdate NJ 07727 (201) 661-6200	
contactor	(213) 769-7611		Office Supply Het Sales, More than \$100 Million
lead of Markenny D.E.J. FitzSimon			Het Sales. More than \$100 Million
	Manufacturing Target Industries: CEM Dealer	Target Industries: Education Target Applications: Training Not Sales: \$5 Million \$25 Million	(1961)
Seegraphic Coverage National Tear Established: 1951		Net Sales: SS Milton - \$25 Milton	Geographic Coverage: National Year Established, 1885
lumber of Employees: 55	Head of Sales Mile Hammon	(1981)	
	Geographic Coverage: International Year Established: 1960	Contacts	SYTROMIX CORP. 2701 E. Chapman Ave
NECESTAL STATEMENT OF THE STATEMENT OF T	Number of Employees 15	Head of Marketing A.G. Anderson	Futerion, CA 92631
	Number of Employees 15	Year Familished 1934	
tousion TX 77066	BON COMPUTER CORP.	Geographic Coverage International Year Established: 1934 Number of Employees: 175	Major Market: Computer
	10 Moulion		Manufacturing
Major Marketsi Component	Cambridge MA 02236 (617) 491-1850	SYSTEMS, INC.	Target Industries: OEM
Computer and Pergheral Annulacturing Systems House	Major Markets: Computer and		Heart of Engagement Keets Watering
OEM: Marsenance Other Services		Oxishoma Cry. OK 73127 (405) 495-7300	Geographic Coverage: International Year Established: 1978
Softwere House		(405) 495-7300	Year Established: 1978 Number of Employees: 21
Target Industries: Oil Banking. Scart: Manufacturing	Government Federal Agencies Large Corporations	Major Markets: Computer	number of Employees 21
Scart Manufacturing Earget Applications: Industrial	Terral Applications Office	Manufacturing OEM Computer Systems, Software House, Systems	CADLING, INC.
	Target Applications: Office Automation: Data Control		1872 Brummel Ets Grove Wage, IL. 80007 (312) 228-7300
6et Sales: \$500 000 — \$1 Million	Contacts: Head of Marketing Charles Stein	Target Industries: Accounting	Ets Grove Wage, IL 60007
1982) Sectoria:	Head of Marketing Charles Stein Head of Sales Terry Fagin	Geographic Contracts National	Many Markets: Software House.
lead of Sales Bohert Solar	Geographic Coverage: International Year Established: 1975	Geographic Coverage: National Year Zetablished: 1977 Number of Employees: 10	Systems House (OEM), Computer
tead of Software/Engineering Lewis	Year Established: 1975	Number of Employees: 10	Manufacturing
Sodden	Humber of Employees, 300	BUNKER RAMO IMPORMATION	ST2 228-9800 Major Markets: Software House. Systems House (ODM). Computer Manufacturing Target Identifies: Manufacturing. Machanical Design
Seographic Coverage: Intervetorial Faar Established: 1973	BILLINGS COMPUTER CORP.		
Sumber of Employees: 9		31717 La Tenda Drive	Control
	Independence MO 64057 (816) 373-0000	P O Box 5009	Contacts:
YDIN CORP.	Major Markets: Computer	P.O. Box 5019 Western Visign, CA 51359 (213) 860-2211 Major Markets: Perpheral and Computer Manufacturing, Software	Head of Marketing William Schaele Head of Sales Don Swenson Head of Software Michael Storling
Controls Division K01 Commerce Drive	Manufactures OFM	Major Markets: Perpheral and	Head of Software, Michael Storing
ort Washington PA 19034 2151 542-7800	Manufacturing, OEM Peopherats Terminate, Software	Computer Manufacturing Software	Geographic Coverage: National
215) 542-7800	House, Systems House (DEM)	House DEM Computer Systems Target Industries: Department of	Geographic Coverage: National Year Established: 1961 Humber of Employees: 65
Sejor Markets: Computer Component, Terraval and	Marcenance Other Services Target Applications: Excitons; Mail Net Sales; \$1 Million — \$5 Million	Target trausmes: Department or	unnegat or Endrelant of
component, Terranal and	Net Sales S1 Monn - S5 Million	Net Sales: \$25 Million — \$100 4Milco (1981)	CADO SYSTEMS CORP.
Communications Equipment Annylacturing, Software House	(1961)	448cn (1981)	2771 Toledo St Torrence, CA 90503
	Contegts:	Cortects:	Tomance, CA 90503
Contacts: lead of Marketing: Joseph Teylor	Head of Marketing Peter Berg Head of Software: Stephen Hatch	Head of Marketing H.A. Lindsay Head of Softwere: P.H. Chang	Major Markets: Computer
ead of Software Charles Wee	Heart of Francescop Robert J. Ration		
Seegraphic Coverage: International	Head of Engineering Robert J. Ridge Head of Customer Service. Jan	Scartercugh Geographic Coverage: National Year East-bland 1964 Humber of Employage: 514	Systems, Systems House (DEM) Not Sales: More than \$100 Million
Fear Established: 1967		Geographic Coverage: National	Net Sales: More than \$100 Million (1981)
	Geographic Coverage: International Year Established: 1975	Marries of Employees 514	
Number of Employees: 390			Head of Marketing Authory Eastertr Head of Sales Donald B Elect
AZURDAYA, INC.	BRANGEN CORP.	BURR BROWN RESEARCH	
AZURDATA, INC. 1102 148th Ave N.E.	BRAKEEN CORP. 20740 Valley Green Drive	BURR BROWN RESEARCH CORP.	Head of Sales Donald B Elliot Head of Engineering Don Saviti
AZURDATA, INC. 4102 148th Ave. N.E Redmond WA 98052	BRAKESH CORP. 20740 Valey Green Drive Cupertro CA 95014	CORP. Industrial Systems Division 1601 E. 44th St.	Head of Customer Service Len
Agunthar of Employees: 390 Agunthar A, 1960, A102 148th Are N. E. Redmond WA. 98032 S509 881-510 Major Marketti: Software House. Computer and Terminal Marketti.org. Tempel Industrian: Food: Drug	BRAKESH CORP. 20740 Valley Green Drive Oupertno CA 95014 (408) 255-4200 Mager Marketis: Computer, Terrison and Persperiel Manufacturing, OEM	BURK SROWN RESEARCH CORP. Industriel Systems Division 3631 E. 44th St. Tunden, AZ. 85713 (920) 747-6711 Illager Markate: Component.	Head of Sales Donald S Effect Head of Crustomer Service Len Jobens Geographic Coverage: International Year Established: 1970 Year Established: 1970

Vendors CALIFORNIA COMPUTER SYSTEMS 250 Camboon Drive Sumpyale CA 94035 (408) 734-5811

Major Market: Computer Manufacturing	Year Established 1970 Number of Employees: 4 000	Head of Marketing Dan Delus Head of Sales Bill Novel
Net Sales: \$5 Milion — \$25 Milion (1981)	CENTRAL DATA CORP.	Head of Software Jeff Goldberg
	1602 Newton Drive	Read of Engineering Ryssell O Cornor
Head of Marketing Lauren Willey Head of Sales Peter Passarets	Champings IL 61820	Geographic Coverage: Internati
	(217) 359 6010 Major Markets Component	Year Established 1973 Number of Employees: 50
Number of Employees: 75	Manufacturing Dealer Distributor, OEM Peripherals Terrorials	CHOICE RETAIL SYSTEMS,
CALLAN DATA SYSTEMS		1345 Terret MA Road
2645 Townsquite Road Westlake Wage CA 91361	Busitess Accounting Tasting Devices	Manetra GA 30067
		(404) 952 1358 Major Markets: Computer and
Major Market: Computer Manufacturing	(1981)	
Target Industries: Medical	Contacts: Head of Marketing Earl D Jacobsen	Computer Systems Software No Terget Industries: Retail Whole:
		Distribution
Mirary Target Applications: Process	Head of Software Charles Weaver Head of Engineering Jeffrey Root!	Target Applications: POS Poting General Business
	Geographic Coverage International Year Established, 1975	
Net Sales: \$1 Milton — \$5 Milton (1981)	Year Established 1975	
Contacts	Number of Employees: 40	West
	CENTURION COMPUTER	Geographic Coverage Internate Year Established 1980
Head of Software Christina Cory Head of Engineering William	CORP. 1780 Javel	Number of Employees: 25
	Richardson TX 75080	CHROMATICS, INC.
Geographic Coverage: Wernstonal Year Established: 1960	(214) 934-5700 Major Market: Computer	2556 Mountain Industrial Blad Tucker GA 30064
- Mumber of Employees 45		Tucker GA 30084 (404) 493-7000
CAMSEX CORP.		
380 Second Ave	General Business Insurance Customer Service	Marufacturing Terget Industries: Manufacturing
Warther MA 02154		
(817) 890-8000 Meen Merket: Computer and	Accounting Contacta:	Process Corres CAD CAM
Pergneral Manufacturing	Head of Engineering Thomas	
Covince. Head of Marketing Jean P. Larkin.	Atwood	Head of Marketing M.L. Durtom
	Geographic Coverage: International Year Established: 1974	Head of Sales Don McKinney Geographic Coverage Internation
Year Established: 1908 Number of Employees: 120	Number of Employees, 100	Year Established: 1975
CANON U.S.A., INC.	CENTURY COMPUTER CORP. 14453 Gas	CIE SYSTEMS, INC. 2515 McCape Wey
		P O Box 16579
Lake Success NY 11042 (518) 486-4700	(214) 233-3236	
	Major Market: Computer Manufacturing	(714) 957-1112 Major Market, Computer
Perpheral and Office Equipment Manufacturing Systems House	Target Industries: Government	
	Automation Nonprofit Credit Unions	Target Industries: OEM Target Applications: General
	Target Applications: Accounting Not Sales: \$1 Milion \$5 Million	
(1561)	(1901) Contacts: -	Contacts: Head of Marketing Warren Blosse
Geographic Coverage: International Year Established: 1(6)		Geographic Coverage National
Number of Employees: 2,500	Head of Engineering Hars Knel	Geographic Coverage: National Year Established: 1981
CARDKEY SYSTEMS	Geographic Coverage: International Year Epiablished: 1975	Number of Employees: 60
20339 Norsholf St	Number of Employees: 30	CMC INTERNATIONAL
Chatsworth CA 91311 (213) 996-7560	CHALLENGE SYSTEMS, INC.	Suite 220 11058 Main St
Mesor Markets: DEM Computer	1925 Commerce	
Systems, Maintenance/Other Services, Computer Nanufacturing	-Richardson, TX 75081 (214) 669-1101	
Terget Applications Access	Morer Markets: OEM Cornouter	Mejor Markets: Computer Minuracturing, Dealer Distributor
Terget Applications Access Control Security Management Net Sales: SS Milcon — \$25 Milcon	Systems. Systems House (DEM)	
	Computer Manufacturing	Net Sales: \$1 Milion — \$5 Milion (1501)
Contacts:	Geographic Coverage, International Year Established: 1982	Contacts:
Read of Marketing Raign Armstrong	CHARLES RIVER DATA	Heed of Marketing Rick Helberg
Geographic Coverage: International Year Established: 1940		Geographic Coverage: Internation Year Extendented: 1975
Number of Employees: 250	4 Tech Cacle Nanck MA 01760	Number of Employeest 19
CASIO, INC.	ISST USS 1800	

CHARLES RIVER DATA SYSTEMS, INC. 4 Tech Crose Nanci MA 01760 1517) 655-1800 Major Marketir OEM Computer Systems. Software House. Computer Nanufacturing

Hajor Markets Dealer Distributor Computer Manufacturing Contacts: Haid of Engineering Johny Coffett Geographic Coverage International

Najor Marketa, Computer
Manufacturing, Software House
OEM Peripharal Tremanis
Target Rebusines: Empires:
Target Rebusines: Empires:
19937
Embedded Marketing, Bray Virgiye
Hold of Marketing, Bray Virgiye
Hold of Empireming, Bob Devis
Tever Established, 1979
Navelor of Empirement, 200
Navelor Target Industries: OEM Education. Communications Commercial Data Net Sales: \$5 Million — \$25 Million (1981) seting Dan DeLea is Bill Nineel ware Jeff Goldberg neering Ryssell Coverage: International shed: 1973

Newton of Employees, 55

CODEX COMP.

CODEX COMP.

TO Claste they
Manufacis AM CODIS
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Manufacis AM
CODIS
STATE
S TAIL SYSTEMS 58 te: Computer and ufacturing: OEM sterns: Software House Wee: Retail: Wholesale cations: POS Poling Vess eting Sales Mercer

number of Employees 2.500
COGENT DATA
TECHNOLOGIES
TECHNOLOGIES
TO Bee 500
TO Bee 500
To Bee 500
Major Markers Propher or Manager Markers Propher or Manager Markers Propher or Markers Or Markers Demons Not Markers Or Markers Demons Anderson
The Markers Propher or Markers Or Markers Demons Not Markers Or Markers Demons Saly Geographic Company or Markers Demons S hee 1980 ngloyses: 25 ries: Manufacturing. ations: Graphics or CAO CAM

ring M.L. Durtern Don McKenney Inversige International Need: 1976

Namber of Employees. 15
COLOMIAL DATA SERVICES
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MBIA GATA PRODUCTS

Number of Employees 150	Wayne PA 19067 (215) 687 9750	Net Sales: More than \$100 Million (1982)	Affanta GA 30071 (404) 441-3114
	Major Markets Computer and	Contacts: -	(404) 441-3114
Additional information provided for by supplier		Head of Marketing Bryan E	Major Markets: Peripheral Component. Computer and
	House Systems House (DEM)	Newman	
Call Hall-Mark for Columbia	Contacts:	Hoad of Sales: James Winters	Manufacturing OEM Computer
Dala you compuler systems	Head of Software Paul Goneen Geographic Coverage: International	Head of Software Edward Norwin Head of Engineering Direct	Systems: Software House: Systems: House (DEM): Dealer Distributor.
and peopherals source for the	Geographic Coverage: International	Head of Engineering Deed	Maintenance Other Services
491	COMMUNICATION	Constant Courses Management	Terpet Industries: Utilies
Hall-Mark Electronics Corp	MANUFACTURING CO.	Geographic Coverage International Year Established: 1961	Manufacturing Retail Whotesale
11233 Popernel Rd	3300 E Spring St Long Beach CA 90801	Number of Erreferens, 4,300	
P.O. Box 222035	Long Beach CA 90801		
Dallas Texas 75222	(213) 426 8345	COMPUMOTOR CORP.,	
	Major Market Computer	1310 Ross St	Net Sales: \$1 Milion - \$5 Milion
Call your local Hot-Mark office	Manufactur g Target Industries: Security Access	Peralyma CA 94952 (707) 776-1244	(1962)
for service .	Control	Major Markets, Component	Contacts: Head of Marketing Steve A
	Terget Applications Facility	Corporate and Beretarni	Authoritor
NORTHEAST "	Management	Computer and Peripheral Manufacturing Miscellaneous	Head of Software R L. Pass
Boston (617) 935-9777	Management Net Sales: \$5 thillon — \$25 Million		Head of Engineering Dr Dwight
Cherry Hill (609) 424-7300			
Forteld (201) 575-4415	Contacts:	Robotics	Geographic Coverage: International Year Established: 1977
New York (516) 737-0600 Philodelphia (215) 355-7300	Head of Marketing Jack Shelton Head of Sales Jim St. Pieme	Contacts: Head of Sales Scott Johnson	Year Established: 1977 Number of Employees: 30
messeprio (215) 355-7300	Geographic Coverage International	Head of Sales Scott Johnson Head of Engineering Cap Jacobs	Mumber or Employees 30
SOUTHEAST	Year Established: 1952	Consended Cap Jacobs	COMPUTER CONSOLES, INC.
Atlorro (404) 447-8000	Number of Employees, 250	Geographic Coverage: National Year Established: 1978 Number of Employees: 50	97 Humbott St
Ballimore (201) 796-9200		Number of Employees: 60	Rochester NY 14609 (716) 462-5000
FI Lauderdale (305) 971-9280	COMPAL COMPUTER		(716) 462-5000
Muntsville (205) #37-8700	SYSTEMS, INC.	COMPUPRO CORP.	Major Markets: OEM Computer
Orlando (305) 855-4020	15617A Ventura Blvd	Building 725	Systems Computer Manufacturing
Roleigh . (919) 872-0712	Enono CA 91436 (213) 907-8003	Oakland Airport CA 94614 (415) 562-0636	Target Industries: Telephone GA Target Applications: WP Directory
torroo/	Major Markets: Computer and	Major Marketa: Computer and	Assistance OA
51 Pelenburg (613) 576-8691	Termnal Manufacturing OEM	Perphiral Manufacturing OEM	Contacts:
			Head of Markenno Sales Gary
NORTH CENTRAL			
Chicogo (312) 860-3800	Dealer Distributor	Target industries: General Business, Industrial Scientific	Head of Engineering William Deter
Cecinnols (513) 563-5980	Manterance Other Services	Business Industrial Scientific	Geographic Coverage, National Year Established, 1966
Cleverand (216) 473-2907	Head of Marketing Ira Kath	Head of Sales Jim Lamphear	Year Established: 1966
Columbus (614) 891-4555 Milystylkee (414) 761-3000	Head or Makeing I/a Kato	Hear or Sales are Lampreer	COMPUTER DEMONED
Mirnegools (612) 854-3223	Geographic Coverage California Year Established, 1976	Geographic Coverage International Year Established: 1975 Number of Employees: 50	
Mirrie Opolis .(0 12) 054-3223	Number of Employees 15	Number of Erselouses: 50	Commercial Systems Division 10911 Olson Memorial Highway Minneagolis MN: 55441 1612) 545-2855
SOUTH CENTRAL			10911 Olson Memorial Highway
Augin : (512) 250 8848	COMPAG COMPUTER CORP.	COMPUTER AUTOMATION,	Minneapolis Mis 55441 -
	12330 Perry Road Houston TX 77070	NMG. Natural Mins Diseason	(612) 545-2855
Housian (713) 781-6100	(713) 890-6390	Naked Mini Diveron 2181 Dupont Drive	Major Markets Component. Computer Terminal and Peopheral
Korsos C4v (913) 886 4747	Major Market: Computer	Irvne CA 92713	Manufacturing OEM Computer
\$ Louis (314) 291-5350			System Systems House (CFS6)
Tueso (916) 665-3200	Target Industries: Designs	Major Markets: Component	Systems Systems House (OEM) Target Industries, Manufacturing.
	Contacts.		
WEST	Head of Marketing, Mike Swabely	Manufacturing OEM Computer Systems and Penghenas Terrinals	
Derreer (303) 694-1662	Geographic Coverage: National Year Fetablished, 1982	Systems and Pengherals Terrinols	(1961)
Phoenix (602) 243-6601 San Diego (619) 268-1201	Year Established, 1982 ,	Martenance Other Services Contacts	Contacts: Head of Engineering Theresic
	COMPUCORP	Contacts	head or Engineering Triansist
Sunnyvoie (408) 773-9990	2211 Mchigan Ave	Canada Canada International	Consession Consession Material .
		Head of Marketing Norm Breyga Geographic Coverage: International Year Established: 1967	Year Established 1997
COMARR CORP.		Number of Employees: 300	Spropoutos Geographic Coverage: Nutronal Year Established: 1905 Number of Employees: 45
i3 West St	Major Markets: Computer and Office		
O Box 474	Equipment Manufacturing Data	COMPUTER AUTOMATION,	COMPUTER BEVICES, INC.
deplets MA 02052	Services	INC.	25 North Are
617: 359-6161 Najor Markets: Component	Terpet Industries: Legal Business Terpet Applications: WP	Commercial Bystems Division	
Pergheral and Computer	Accounting	2181 Dupont Drive Irvne CA #2713	(817) 273-1560 Major Markets Computer and Terminal Manufacturing Net Bales: \$5 Major — \$25 Million (1981)
	Not Sales: \$5 Million \$25 Million		Termon Mandata Componi and
Vistems Dealer Distributor	(1981)	Maker Markada: Computer and	Net Sales: \$5 Milion - \$25 Milion
Systems Dealer Distributor Aumeriance Other Services		Major Merkets: Computer and Communications Equipment Manufacturing Mantenance-Other	(1981)
Control Lab Functions Date		Manufacturing Mantenance-Other	
Control, Lab Functions Dans	Geographic Coverage: International Year Established: 1968		Head of Marketing Sales Robert
country Accounting	Year Established: 1966	Target Industries: Distribution	Joseph Head of Engineering Gerry Galicki
let Sales: \$1 Milion — \$5 Milion	Humber of Employees: 500		Head of Engineering Gerry Galichi
(981) Contacts:	COMPUGRAPHIC CORP.	Head of Marketing Richard A . Comstock	Geographic Coverage: International
lead of Marketino Mike Glosso	200 Retestant C	Geographic Coverage: International	Geographic Coverage: International Year Established: 1954 Number of Employees: 350
Januarathy Courses Warnitrout	200 Batardysie St Wirmnolon MA 01867		
Seographic Coverage: International Fear Established, 1975	(617) 944-6505	Humber of Employees: 200	COMPUTER HARDWARE, HIC.
tumber of Employees: 50			43500 Pel Drive P O Box 2550000
		COMPUTER COMMUNICATIONS SPECIALISTS, INC.	P O Box 2550000
COMMODORE BUSINESS EACHINES, INC.		COMMUNICATIONS	Sacramento CA 95638 (916) 929-2020
MACONIMA COM	Newspaper, Commercial Frening	CONTRACTOR OF THE	the service

Equipment Manufacturing, Dealer District, for Terrort Industries, Pestaurants	Target Industries: Industrial Target Applications: Automatic	Net Sales \$1 Milion \$5 Milion (1901)	Year Established: 1975 Number of Employees: 800
Target industries: Pestaurants. Hotels	Testing Process Monitoring Machine Control Sciences	Geographic Coverage: International Tear Established: 1979	- Indespets occ
Target Applications: Accounts	Machine Control Scientific Liéboratory		Additional information
Pilyathe Job Costrio	Net Sales: \$100 000 — \$500 000	Number of Employees: 14	provided for by supplier
Net Sales, \$5 Milion - \$25 Milion	(1984)	CORVUS SYSTEMS, INC.	previous to by appear
(1981)	Centacts:	CORVUS SYSTEMS, INC.	lancario e
Contacts	Head of Marketing Sales George	2029 O Toole Ave	Call Hall-Mark for Cromer
	Thomas	Sin Jose CA 95131 (608) 946 7200	your computer systems
Head of Sales Robert Park	Head of Software/Engineering Ron	Major Markets: Computer and	perpherals source for the I
		Pengneral Manufacturing, Software	
Head of Engineering Ed	Geographic Coverage: National Year Established, 1975	House .	11
Reservecer	Year Established 1975	Terpet Industries: Fortune 1000 Net Sales: \$25 Million - \$100	Half-Mark Electronics Corp.
Head of Customer Service Jeff Hor		Net Sales: \$25 Milion - \$100	P.O. Ann 222035
Geographic Coverage: International Year Established: 1969		Milion (1962)	
Year Established: 1969 Number of Employees: 50		Contacts:	Dates, fexes 75222
Martiner of Employees: (C	8100 34th Ave South	Head of Marketing Joseph D	1 to
COMPLITER SYSTEMS	Moneappin MN 55417	Hughes	Call your local Hat-Mark of for service:
26401 Harper Ave	(612) 853-8100	Head of Engineering Mark C. Hahn	IOI SERVICE.
St Clar Shores Mt 46081	Major Markets: Component	Geographic Coverage: International Year Established: 1979	NORTHEAST
	Computer, Terminal Peripheral and	Number of Employees: 325	Boston (617) 935-0
	Communications Equipment	written or Embeddeet 150	Boston (\$17) 935-9
	Manufacturing Miscelaneous	COSMOS SYSTEMS, INC.	Cherry H6 (609) 424-1 Fourield (201) 575-4
Equipment Manufacturing, QFM	Computer Supplies: Data Services	438 Toyara	New York (514) 232-6
	Mantenana Other Courses	430 Toyarra	
	Martenance Other Services Terget Industries: Manufacturing	Sunnyvale, CA 94086 (408) 744-0721	Philodelphia (215) 355-7
	- Government, Small Business	Mean Merket Computer	11
Target Applications: Graphics.		Manyacturing	SOUTHEAST
	Terget Applications: CAD/CAM	Contacts:	Alionia (404) 447-8
Date Acquistion			Battimore (301) 796-4
Contacts:	Petroleum Exploration Circtronic	Geographic Coverage: International Year Established: 1960	Pr Laudendale (305) 971-0
Head of Marketing Sales Robert	Utday Operation	Year Fetablished: 1560	Muntsville (205) 837-8
Martin	Net Seles: More than \$100 Million	Number of Employees: 35	Oriando . (305) 855-4
Geographic Coverage: National Tear Equiphened: 1967 Number of Employees: 20	(1981)		
Year Established: 1967	Contacts	CRAY RESEARCH, INC.	Tompa/
number of Engelyoos: 20	Head of Marketing R'D Schmidt Head of Sales R Bargetin	608 Second Ave. 5	\$2 Feleraburg (813) 576-8
COMPUTER TALK, INC.	Head of Sales: R. Bargelli		
2000 S. Rooney Road	Head of Customer Service J H	(612) 333-5889	NORTH CENTRAL
Morrison CO 80465		Major Market: Computer	Chicogo (\$12) 869-3
Morrison CO 80465 (303) 897-5485	Geographic Coverage: htternational Year Established: 1957	Manufacturing Terget industries: Scientific -	
Major Markets: Software House,	- Number of Employees: 57 000	Terget industries: Spentific -	Oeveland (216) 473-2
Systems House (OEM)	Mumber of Employees: 57 000		
	CONVERGENT	Aerospace	Mewoukee . (414) 761-3
	TECHNOLOGISS, INC.	Net Sales: More than \$100 Million	Minneapole (612) 854 3
Tennet Industries: Engineering	2500 Augustine Drive	(1981) Contacts:	
Target Industries: Engineering Target Applications: Graphics Het Bates: \$500.00 — \$1 Milion	Freds Class CA 0000	Contacts	SOUTH CENTRAL
Het Seles, \$500.00 - \$1 Milion	Senia Clara, CA 95051 (408) 727-8600	Head of Marketing Michael Dickey Head of Sales Bruce N Kasson Head of Software Margaret A	Austin (512) 258-8
	Major Market Computer	Head of Select Bruce in Nasson	Austin (512) 258-8 Dollos (214) 341-1
Contagets:	Man fact con	Lotus	Housian . (713) 781-6
Head of Marketing Sales, Lindo	Manufacturing Terroet Industries: OFM	Head of Engineering Les T Davis Head of Customer Service Don	Housian . (713) 781-6 Kansas City . (913) 888-4
Stakley	Net Sales: \$25 Milion - \$100	Head of Customer Secure Pop	St Louis (314) 291-5
Geographic Ceverage: National	MAION (1962)	Whiting	Tutso . (918) 665-3
Year Established: 1972	Contacts:	Contractic Courses International	1.000 00
Geographic Coverage: National Year Established: 1972 Number of Employees: 10	Head of Marketing Payline Alker	Geographic Coverage: International Year Established: 1972	west .
		Number of Employees: 50	Denver (303) 404, 14
CONTEX, INC.	Geographic Coverage International Year Established: 1979		Phoenis (602) 243 6
San Aniono, TX 78212	Year Established: 1979	CRC SYSTEMS, INC.	Son Diego (619) 246-1
15121 828-0908	Number of Employees: 700	1145 W Colles Ave	San Diego (619) 248-1. Sunnyvale: (608) 773-9
		Orange CA 92667 (714) 633-8660	(ede) 1734
Systems, Systems House (OEM).	CORONA DATA SYSTEMS,	(714) 633-8660	
	31324 Via Colinas	Major Market: Computer	CWI TERMINAL CORP.
Services. Computer Manufacturing	31304 Via Colevas	Manufacturing Target Industries: Retail.	250 Crossways Park Onve Woodbury, Nr 11797 (\$16) 364-2121
	W. Lake Wage. CA 81361 (213) 706-1506		Woodbury, NY 11797
Contractors, Home Builders Target Applications: Inventory, Job	Major Markets Percheral and	Supermarkets Target Applications: Management Geographic Coverage: Wentstone Year Established: 1963 Humber of Employees: 14	(\$16) 364-2121
Ternet Assistations: Investory John	Computer Manufactures	Target Approcessors: Management	Major Merkete: Computer and Terminal Manufacturing Sohwa
	Contacts	Geographic Coverage: Wemational	Terrena Manufacturing Softwar
	Head of Marketing P Kramerz	THAT ESSESSIONER 1953	
Head of Software William L. Seno		Annual or Enthurham in	Certects
Head of Engineering Ronald	Geographic Coverage: Warrational Year Established: 1981	CROMEMOD, INC.	Head of Manustry: Bran Stephe Geographic Coverage: Internal Year Established: 1973 Number of Employees: 250
	Year Established 1981	260 Bernardo Ave	Geographic Coverage: myrrati
Geographic Coverage: Regional Year Established: 1975	Number of Employees: 35	Maretter Very C4 04043	1001 Esseptioned: 1973
Year Established: 1975		Mountain View, CA 94043 (415) 964-7400	mamber or Employees: 250
Humber of Employees: 32	CORPORATE DATA	Mary Markets: Commonent	CVERTEN NAC
	SCIENCES, INC.	Major Markets: Component. Computer and Peripheral	7540 S. Marrotte Overs
CONTEMPORARY CONTROL			CYBERSYSTEMS, INC. 7540 S. Mercerus Plwy. Huntsville. AR. 35402
SYSTEMS, INC.	San Jose, CA 95132 1409 946-1279		(205) 563-6410 Major Markets: Component and Computer Manufacturing, OEV
494) Forest Ave	1408) 946-1279		Major Markets Commonest and
Downers Grove 8. 60515 (312) 963-7070	Major Markets: Computer Manufacturing: OEM		Computer Manufacturing Office
(312) 963-7070	Manufacturing: OEM	Head of Engineering Dr. Roger	Computer Systems Target Industries: OEM, Manufactures
	Pergherats/Terminals Software		
Major Markets: OEM Computer Systems: Computer Manufacturing	House	Geographic Coverage: National	

Target Assistations: Martino	Surveyvan CA 94086 (408) 735-6323	Manufactures, OEM Computer	Heat of Franceson Con Name
Target Applications: Machine Control Industrial Monsoring Net Sales: \$500 000 — \$1 Million	(408) 735-0323		Head of Engineering Gary Hass Head of Customer Service Perr
Net Sales: \$500 000 \$1 Million	Major Markets: Component.	Terpet Industries: Manufacturing Net Sales: \$5 Million — \$25 Million	Mytess
(1961)	Computer and Perpheral	Net Sales: \$5 Million — \$25 Million	Geographic Coverage: Internet
Contacts: Head of Marketing L. Michael Long	Manufacturing OEM Percharati Terminals	(1981)	Geographic Coverage: Internet Year Established: 1974 Number of Employees: 50
Head of Engineering Dennis Serk	Target industries OEM	Contacts: Head of Marketing Peter Yestman	Number of Employees: 50
Geographic Countries National	Net Select: \$1 Million - \$5 Million	Head of Engineering Berne Helingel Geographic Ceverage: Informational Year Established, 1967 Number of Employees: 200	DATAWEST CORP.
Geographic Coverage, National Year Established: 1974	(1962)	Generature Courses Marratonal	7333 E. Helm Drive
Humber of Employees: 25"	Contacts:	Year Established 1967	
	Head of Marketing Sales Don Smith	Number of Employees: 200	(602) 948-3280
CYB STSTEMS, INC.	Head of Engineering Dr Gordon	DATA TECHNOLOGY	Major Markets: Computer and
6449 Highway 2906 Austin TX 78723	Keter	DATA TECHNOLOGY	Pergneral Manufacturing OEM Computer Systems. Systems He
(\$12) 456-2024	Geographic Coverage: International Year Established: 1960	701 A Whitey St.	(OFM)
Major Market: Computer	Humber of Employees, 56		Terret Industries George-
			Target Industries: Geophysical, Vibration Nuclear Engineering Target Applications: Data Acquisition, Fluid Montoring.
	DATA-MAX		Target Applications: Date
Target Applications: Hospital and	1965 Prest Blvd		Acquistion, Fluid Montoring
Pharmaceutical Supplies, Amoralt Contents:	Elk Grove Village, IL 60007 (312) 941-8005	Systems House (OCM).	Version Analysis, Measuremen Net Sales: \$1 Million — \$5 Mills
Head of Marketing Brian Fugate	(312) 961-5205 Major Markets: Computer Terroral	Target Industries: Senting, OEM	Net Sales: \$1 Million — \$5 Mills (1961)
Consession Consessor Manual Const	and Peripheral Manufacturing, OEM	Government	Contacts:
Geographic Coverage: International Year Established: 1982	Conquer Systems	Yearst Assessment Assessment	Head of Marketing Engineering
Number of Employees: 40	Target Applications: Anmaton.	Target Applications: Accounting, WP, Forecasting Modeling Net Sales: SS Million — \$25 Million	
		Net Sales: 55 Million - \$25 Million	Geographic Coverage: Internal Year Established: 1965 Number of Employees: 12
DAIST SYSTEMS CORP.	Contacts	(1982)	Year Established: 1966
139 Killer Court	Head of Marketing Stuart Tanaka	Contacts.	Number of Employees: 12
Surreyvale CA 94086	Head of Sales: Justin Crowley	Head of Marketing Sales Kelth	
Major Markets: Computer	Head of Engineering Ron Chan	Sipper	DATEC, INC.
Major markets Control	Geographic Coverage: International Year Established: 1975	Head of Engineering Frank Adams Geographic Coverage: International Year Established: 1978 Number of Employees: 30	Suite 2114 2860 S. Carde Drive
Manufacturing OEM Computer Systems Software House	Number of Employees: 10	Year Established 1924	
		Number of Franciscopes 30	Crevario Spores, CD 80935
	DATA/MEDIA CORP.		Colorado Springs, CO 80935 (300) 579 0166
Miscelaneous Computer Supplies	Remsauken NJ 08108 (609) 665-5400	DATA TERMINAL &	Major Marketi Computer Manufacturing
Targel Industries: Engineering Target Applications: Computer- Added Engineering	Remsaulen NJ 08109	COMMUNICATION 590 Division St	Manufacturing
Target Applications: Computer-	(609) 965-5400	S90 Division St Carnotest CA 95008	Target Industries: Manufacture
Contacts:	Major Markets: Computer and	Campbel CA 95008 (408) 378-1112	
Head of Marketing Harvey Jones	Terminal Manufacturing, QEM Pergherals Terminals, Systems	(438) 378-1112	Target Applications: Inventory Control Data Collection
Hisatra Sales Gren I uncit	House (OEM)	Major Markets: Pengheral and Computer Manufacturing, OEM Computer Systems	
Head of Sales. Greg Lynoit Head of Software. Ram Bann	Net Sales: \$5 Milion \$25 Milion	Computer Systems	Head of Engineering Will Hones Head of Customer Service Mike
Head of Customer Service David	(1961)		Head of Customer Service Miss
	Contects:	(1901)	
Geographic Coverage International Year Established: 1980 Marsher of Employees: 100	Head of Marketing Frank Zets	Contacts.	Geographic Coverage: Internal Year Established: 1983 Number of Employees: 15
Year Established: 1980	Head of Engineering Flori Johnsoft Geographic Coverage: Hierastonal Year Established: 1989 Humber of Employees: 250	Head of Marketing Sales: John Williams	Year Established: 1963
Number of Employees: 100	Geographic Coverage: International	Head of Software/Engineering Ros	Number of Employees: 15
DATACOM CORP.	Tear Catablanes, 1909	Freding	DATRICON CORP.
	mande or Endealess 100	Generator Courses International	
	BATAPOINT CORP.	Geographic Coverage: International Year Established: 1968	Lake Ovwego OR \$7034 (503) 636-7671 Major Marketz: OEM Computer
(612) 292-8188	9725 Datapoint Drive	Number of Employees: 50	(503) 636-7671
	San Artone, YX 78264 (512) 669-7000		Major Markets: OEM Computer
Communications, Equipment	(512) 689-7000	BATA TOOLS	Systems, Perpheral and Compu
Manufacturing	Major Markete: Software House: Perpheral Computer	INTERNATIONAL, INC.	Manufacturing
Manufacturing Target Industries: Insurance, Legal: Business	Convenience Equipment and	5470 N W Innsbrook Place Portland, OR 97229	Systems: Pergheral and Compu Manufacturing Terget industries: Manufacturin Tanget Applications: Process Control Centacts:
	Office Equipment Menufacturing.	(503) 645-4604	Control
	OFM Computer Systems	Many Market Corrector	Contacto
Head of Engineering Al Nuerdorf Head of Customer Service Jerry	OEM Computer Systems, Dealer Distributor,	Major Market: Computer Marufacturing Terget Industries: OEM	
Head of Customer Service Jerry	Maintenance-Other Services	Target Industries: OEM	Head of Engreering Devid Base
Thombeck	Mamerance-Other Services Tergel Industries: General Business Scentific Government	Net Sales: Loss than \$100,000	Head of Engineering David Raa Geographic Coverage: Internal Year Established: 1979 Number of Employees: 40
Geographic Coverage: International Year Established: 1979	Business Scientific Government	Net Sales: Loss than \$100,000 (1981)	Year Established: 1979
Mumber of Employees: 24	Target Approacens: DOP, WY, UK.	Contects:	Number of Employees: 40
memory or emproyees, a-	Target Applications: DOP, WP, QA, Electronic Messaging Net Sales: More than \$100 Million	Manual of Manhatona Class Chanadan	DAYSD COMPUTER, INC.
DATA GENERAL CORP.	(1982)	Generathic Common National	
4400 Computer Drive Westboro MA 01560 (817) 366-8011		Head of Marketing Don Duneton Geographic Ceverage: National Year Established: 1978 Number of Employees: 5	1881 Keiser Ave
Westooro MA 01560		Number of Employees: 5	Irwne CA 92714
(517) 366-8911	Selgman Head of Seles Deniel A Hosage		(714) 996-1717
Major Markets: Computer Terrensi	Head of Sales Deniel A Hosage	DATAVUE CORP.	Major Market Computer
and Perpheral Manufacturing Het Sales: Over \$100 Million (1981)	Head of Engineering Victor D Poor Head of Customer Service Joseph	1911 22nd Ave S Septie WA 98144	1861 Keiser Ave Irvne, CA 92714 (714) 996-1717 Major Market Computer Manufacturing
Contacts: Over \$100 Milion (1981)	C Casulto		Mand of Community Many State
Heart of Sales Frank M. Known	Generality Common International		Head of Engineering Hans Scel Geographic Coverage, Internal Year Established: 1979 Number of Employees: 25
Head of Sales Frank M. Knavey Head of Customer Service Frank P.	Geographic Ceverage: Interrotional Year Established: 1909 Number of Employees: 7,000	Component and Terminal	Year Established: 1979
	Number of Employees: 7,000	Manufacturing Software House.	Number of Employees: 25
Geographic Coverage: International Year Established: 1968 Humber of Engloyees: 15.000		Component and Terminal Manufacturing Software House. OCM Computer Systems Terget Industries: Financel. Office Automation, CAD Terget Applications: CPIM, CAD Terget Applications: CPIM, CAD	
Year Established: 1968	BAYARAM CORP.	Target Industries: Financial Office	BAVIDGE CORP.
Number of Eroptoyees: 15,000	Princeron Road	Automation, CAD	Suite X 1951 Colony St
DATAMAC COMPUTER	Cranbury, NJ 08512 (806) 799-0071	Terget Applications: CPIM, CAD General Business	1901 Courty of
			Mountain View CA 94043

Manufacturing Target Industries: OEM	(215) 628 4530 Major Markets Computer	Geographic Coverage: Regional Year Established: 1975	(219) 465-6414 Major Marketa Component a
Distributors Compets:	Component and Communications Equipment Manufacturing OEM	Number of Employees 85	
Head of Marketing, Susan Sulvan	Computer Systems Net Sales \$25 Million — \$100	DIGITAL TECHNOLOGY	- Computer Systems Software House Dealer Distributor -
Geographic Covarage international Year Established 1902	Met Sales \$25 Milton - \$100	INTERNATIONAL	Mannenance Other Services
Number of Employees, 0	Mission (1981) Contacts	1200 South 500 West	Target Industries: Manufactus Professional
	Head of Marketing Sales Roy	Overs. UT 54058 (801) 226-2984	Net Selen: \$500 000 - \$1 M
DELTA PRODUCTS, INC. 15392 Assembly Lane	Gernbering Geographic Coverage: International	Major Markets: Computer Manufacturing, Software House	
		Terget Industries: Printing	Contacts: - Im Kulter
	Number of Employees 175	Puckstwog Real Estate	Geographic Coverage: Intern. Year Established: 1978
Major Markets, Computer		Target Applications: Data Entry, Typesetting	Year Established: 1978
Manufacturing Dealer Distributor Net Sales: \$1 Million \$5 Million	DIGITAL EQUIPMENT		Number of Employees: 10.
(1961) Contacts:	CORP.	Head of Markstee Judy Leetham	DOCUTEL OLIVETTI COR
	Meanard MA 01754	Head of Engineering John Terry	Diffice Products Division 155 White Plans Road
Geographic Coverage: International Year Established: 1976	(617) 897-5111	Geographic Coverage: National Year Established: 1960	
Year Established: 1976 Number of Employees: 40	Major Markets: Component Corrouter: Terminal Pensity and	Number of Employees: 50	(914) 631-6100 Major Markets, Computer Te
	Communications Foundment	DIGITAN SYSTEMS, INC.	
DENELCOR, INC. 17000 E One Pace	Manufacturing Softwers House Dealer Distributor		
Autore CO 80017	Maintenance Other Services	Brocklyn, NY 11204 (212) 436 30777	Dealer Distributor Marrience Other Services
(333) 337-7900	Miscellaneous Computer Supplies		Target Industries: General But Target Applications: DA Gen
Major Market: Computer Manufacturing	Het Sales: More than \$100 Milion (1981)	Manufacturing OEM Computer Systems, Software House Systems	Target Applications: DA Gen Accounting
	Contacts:	House (DEM)	Accounting Contacts:
Head of Marketing J. Philip Carley	Head of Engineering G. Gordon Bell Geographic Coversor: international		Head of Marketing Arthur
Head of Sales Russel Saunders Head of Software John Lennon		Standard Business Equipment Professional Market Rental	Oppendent
	Number of Employees: 67,000		Geographic Coverage: Internal Year Established: 1955
Moorner Number of Employees: 160	DIGITAL MICROSYSTEMS.	Target Applications: Invoicing. Payrol: CAGICAM	
	INC. (DMS)	Net Sales: \$1 Milion — \$5 Milion	DP BUSINESS SYSTEMS, 111 Et Morroe Way
715 N Pastona Ave	1640 Embarcadero	(1962)	Concord CA 94518 (415) 680-0215
Surryvate CA 194086	Oakland, CA 94606 (414) 532-3686	Contacts: . Hoad of Marketing/Sales Abraham	Major Markste: Computer and
Major Markets: Computer and Peopheral Manufacturing	Manufacturing Contacts	Head of Software Lazer Poliock	
		Head of Engineering Milton Spirrer Generality Consessor National	Terget Industries Photograph Terget Applications Products Control and Management
Head of Marketing At Roberts		Geographic Coverage: National Year Established, 1976	Control and Management
Head of Engineering Hun-Sun Chem Generalities Chemistrania Mississipping	Geographic Coverage: Vicenational Number of Employees: 50	Number of Employees: 37	Accounting Contexts:
Geographic Coverage: International Year Established: 1903		DIRECT, INC.	Head of Marketon, Mike Lived
Number of Employees: 20	BIGITAL PATHWAYS, INC. 1060 E. Mesdows Cross	4201 Burton Drive Santa Clara CA 95094	Geographic Coverage: Nation Year Established: 1978
DIGICOMP RESEARCH CORP.		(408) 980-1414	Number of Employees: 5
Terrace HIS Shace NY 14850		Major Markets: Computer and	
(507) 273-5900	Major Markets: OEM Computer Systems. Pengheral and Computer	Terronal Manufacturing Terget Industries: Retail	DUAL SYSTEMS CORP. 2530 San Publo
Major Market: Computer			Berkeley, CA 94702 1415/549-3890
Manufacturing Target industries, Government	Target Applications: Time Clocking. Computer Montgang	Head of Marketing Steve Auvitore	(415) 549-3890
Net Select \$500,000 \$1 Million		Geographic Coverage: International Year Established: 1978	Major Markets: OEM Computer Systems and Perpherals Terms
Net Selex: \$500 000 \$1 Million (1951)		Number of Employees: 125	
	Contacts: Head of Marketing John Anderson	DISPLAY DATA CORP.	Target Industries: Education (Target Applications: Schwarz
		Executive Plaze IV	
Head of Software Jim Elkins Head of Engineering Dean Eckstrom	Geographic Coverage: International * Year Established 1970	Hurs Valley MD 21031 (800: 638-1100	Het Sales: \$100,000 \$500 (
Geographic Coverage: National Year Established: 1975	Number of Employees, 25	Major Markets: Corrouter	
Year Established: 1975 Number of Employees, 25			Head of Sales Peter DeVines
	DIGITAL SYSTEMS CORP.	Services Target Industries' Automotive	Geographic Coverage, Nation
DIGIDYNE CORP.		Trucking Agriculture, Soft Denke	Head of Sales Peter Devices Geographic Coverage, Nation Year Established: 1979 Number of Employees: 30
4901 Morria Blvd Building 800	(301) 845-4141 Major Markets: Component and	Trucking Agriculture, Soft Denke Target Agelications: Accounting, Inventory, Route Distribution,	
San Dego, CA 92117 (618) 483-0364	Corrector Manufacturing Software	Ventory House Castroueon.	3003 N Fest St
(618) 483 0364		Vending Machine Control Net Seles: \$25 Million — \$100	San Jose CA .95134 (408) 946-5000
Major Marketa: Component and Computer Manufacturing, OEM	Maintenance Other Services OEM Computer Systems, Systems House	Milion (1981) Contacts.	Marie Markete Corre (dr and
Pergherals/Terrorals Contacts:			Major Markets: Computer and Peopheral Manufacturing, OEM Computer Systems and Peopherasi Terminals, Software
Head of Marketon Rel are	Target Industries: General Business Target Applications: Accounting	Head of Customer Service Richard Songer	Computer Systems and
Geographic Coverage: International Year Established: 1977	Psyroll sweetery Net Sales: S1 Million ~ \$5 Million	Geographic Coverage: National	
Year Established: 1977 Humber of Employees: 68	Net Sales: \$1 Million ~ \$5 Million	Geographic Coverage: National Year Established: 1973 Number of Employees: 500	Contects:
manager on engraphers (6)	(1961)	Number of Employees: 500	Head of Marketing Charles

Number of Employees, 175	Manufacturing	Linthoun Heath MD 21000	Head of Sales Enc Binder
SYMASTTE	Target Industries: OEM · Net Sales: \$100 000 — \$500 000	(301) 636-5680	Geographic Coverage international Year Established: 1938 Number of Employees: 200
521 Cottonwood Drive	(1981)	Major Markets: Component and Computer Manufacturing DEM	Year Established: 1938
	Contacto		Muster of Employees, 200
	Head of Marketing, Vincent Dupre	(CEM) Dealer Distributor Target Moustres: Construction Target Applications: Estimating Net Sales: \$5 Million — \$25 Million	FLOATING POINT SYSTEMS.
Major Markets: Computer	Geographic Coverage: National Year Established: 1975	Target Industries: Construction	MC.
Manufacturing Systems House	Number of Employees: 10	Target Applications: Estimating	PO Box 23469 Portland OR 97222
Net Sales: 55 Milion - \$25 Milion	mamper or Employaes: 10	(1961)	Fortand OR 97223 (503) 641-3151
(1961)	E A L INSTRUMENTS, INC.	Contacts	Mary Market Comp. or
Contacts:	61 Fest St		Major Market: Computer Manufacturing
Head of Marketing Jerry Keeran . Head of Software John Royders	Derby CT 06418 (253) 735-8774	Schoeder	
	Mesor Merkets: Computer	Head of Softshare Gary Kissinger	Engineering Net Sales: \$25 Million — \$100
Geographic Coverage International		Head of Engineering N Jost Keter Geographic Coverage, International Year Estateshed, 1973 Number of Employees 70	Met Sales: \$25 Milion — \$100 Milion (1901)
Geographic Coverage international Year Established 1977 Humber of Employees: 100		Year Estatushed, 1973	Contacts
Number of Employees: 100	Target Industries: Education	Number of Employees: 70	
EAGLE COMPUTER, INC.			Geographic Coverage International Year Established, 1970
EAGLE COMPUTER, INC.	Contacts: Head of Marketing Frank W	ETR SYAR SYSTEMS	Year Established, 1970
2906 Oregon Court Building I-7	Gregoro	1316 N. Assion Blvd	Number of Employees: 1,300
Torrance CA 90503		Witnington CA 91744 (213) 835-2421	PLORIDA COMPUTER
	Geographic Coverage, International Year Established: 1987	Major Markets: Software House	DRAFFICE
Major Markets: Corrputer and Perpheral Manufacturing	Year Established: 1987	Major Markets: Software House, Systems House (OEA), Memorance Other Services.	GRAPHICS 1000 Sand Pond Road Lake Mary FL 32746
Mantenance Other Services	Number of Employees: 45	Mantanance Other Services Computer Manufacturing	Lake Mary FL 32746
Vacced today tops (Smit Business	ELITE CORP.	Computer Manufacturing Contacts:	(305) 321-3000
Yarget Industries: Small Bosiness Net Sales: \$5 Million — \$25 Million	906 N Man St	Hoad of Marketing Tom Wett	Major Markets: Computer and Pergheral Manufacturing
		Generator Emerator National	Target Industries DEM Target Applications. Graphics Contacts
Contacts:	(316) 265-0959	Geographic Coverage: National Year Established: 1971 Number of Employees: 25	Target Applications, Grachet
Head of Marketing Bit Roland Head of Sales Ron Petersen	Major Market Computer 1 Manufacturing	Number of Employees: 25	Contacts
Head of Engineering Gary	Manufacturing	EUCLID COMPUTER, INC.	
Keppenmen	Target Industries High-Technology Target Applications: Robotics.	3099 W 240h St	Geographic Coverage International Year Established: 1961
		Torrange CA 90505	Humber of Employees: 100
Fowler	Geographic Coverage International Year Established: 1952	Torrance CA 90505 (212) 373-9316	
Geographic Coverage International Number of Employees: 250	Year Established: 1982	Major Markets: Covputer	FORMATION, INC.
semander of Entholises: 520	Number of Employees: 10	Manufacturing Dealer Distributor	823 E. Gate Drive
ECS MICROSYSTEMS, INC.	EPIC COMPUTER PRODUCTS.	(213) 373-9316 Major Markets: Computer Manufacturing Deater Districtor Target Industries: Small Business Connects.	Mount Laurei NJ 08054 (809) 234-5020
		Head of Manusong Gorgon Walsh	Marie Markette Communica
San Jose CA 95112	18381 Bandter Cepte	Head of Engineering Kourosh	Major Markets: Computer Minufacturing, OEM Computer
(406) 286-4200	Fourtain Valley, CA 92768 (714) 964-4722		Systems and Perpherals Terminals Software House
Major Markets, OEM.Computer Systems Systems House (OEM)	(714) 564-4722 Major Markets: Computer	Geographic Coverage Material Year Established: 1901 Number of Employees: 5	Software House
Dealer Ontroder Consider	Manufacturing Dealer Destributor	Year Established: 1981	Terget Industries: Manufacturing
Manufacturing	Contacts:	Markey of Employees: 5	Net Sales, SS Millon — \$25 Millon
Manufacturing Target Industries DP		EXG SYSTEMS CORP.	(1981)
	Geographic Coverage, International Year Estateshed, 1962	1089 Airport Road	
(1982)	Year Established, 1982	Minden NV 89423	Head of Marketing Arthur Monderson
Coresets: Head of Marketing Larry Hoflwade	Number of Employees: 35	(702) 782-8166 Meter Merkets: Computer	Mondersonn
	EPSON AMERICA, INC.	Maryland Markette Corporate	Head of Engineering Barry I Kessain Head of Customer Service William
Geographic Coverage. International Year Established: 1979 Humber of Employees: 80		Manufacturing Geoler Detributor Target Industries: Dealers	
Year Established: 1979			Year Established 1970 Mamber of Employees: 260
Number of Employees: 80	(212) 539-9140	Head of Marketing Mack Graham	Number of Employees: 260
E & H SLECTHONICS	Major Markets: Component Computer and Peripheral	Head of Engineering D.E. Grodece Geographic Goverage, International Year Established: 1979 Humber of Employees, 25	
2000 E 28th St School Htt. CA 90806	Manufacturing, OEM Computer-	Year Established: 1979	FORTUNE SYSTEMS CORP.
Signal Hill CA 90806		Number of Produces 25	San Carlos CA 94070
(213) 426-3322	Geographic Coverage: International Year Established: 1978		
Mejor Markets: OEM Corrouter	Year Established: 1978	EZ DAYA, INC.	Major Marketic Computer Manufacturing Schware House Target Industries: Small Bosiness Sinte Pictal Systems Houses Direct
Systems Systems House (OEM) Data Services, Corrocter	SSSEX ENGINSERING CO.	Newvigton industrial Park Newvigton NH (CSEC) Major Markets: Computer	Manufacturing Software House
	Street Industrial Page	Newvogeon NH 03801	Target Industries. Small Bosiness
Terget Industries: Electronics Power Telecommunications	Essex Industrial Plans Essex CT 06426	Mary dark prop	Madeless Systems Rouses Descr
Power Telecommunications	(203) 767-8221	Manutacturing Target Industries: General Business Target Applications: General	Het Seles \$25 Million — \$100 Million (1982)
Net Sales, \$500,000 — \$1 Million (1981)	Major Markets: Component	Tarpet Applications: General	Million (1982).
Contacts:	Computer and Terminal Manufacturing	Business	Cortects:
Head of MarketmorSales Dr Claude	Tarret Industrian Communicat	Head of Marketing Greg Wing	Head of Marketing David Van Den
	Target Industries: Government, Hospital Food Processing, Industrial	Man of Sohware Descriptions	Berg Head of Software Homer Durin
Head of Software Mark Fowler	Terget Applications: Data	Head of Software Dearns Driscot Geographic Coverage, International Year Established: 1978	Generatur Courses Monetons
Head of Engineering Jim Show Geographic Coverage, National Year Established: 1977 Number of Employees: 7	Acquisition Net Sales: \$5 Million \$25 Million	Year Established: 1978	Geographic Ceverage International Year Established: 1921 Mareher of Employees: 500
Geographic Coverage National *	Het Sales: \$5 Million \$25 Million	Number of Employees: 50	Mumber of Employees: 500
Marries of Employees 7	Contacts:	*****	
	Head of Marketon Rouse Joses	PACIT, INC. 235 Man Dunstable Breef	PORWARD TECHNOLOGY,
SLECTRONIC CONTROL	Geographic Coverage: Regional Year Established: 1962	235 Men Duristate Road Nashua NH 03361 (603) 883-4157	2175 Martin Ave
TECHNOLOGY, INC.	Year Established: 1962	(603) 883-4157	Savia Claus CA 95050
763 Ramsey Ave Hidrade, NJ 07205	Number of Employees: 85	Major Markets: Terriesal Computer	(408) 968/2378
(201) 686-8081	SSTMATION, INC.	and Office Equipment Manufacturing	Santa Clay. CA 95050 (408) 969/2376 Mayer Menuet: Computer Manufacturing Target Industries: OEM.
(201) 686-8080 Major Market: Computer	805-L Barkwood Court	Head of Marketing Odd Bjerkmann	Terrat Industrian OCH
		Learn in warrand Old Beaution	

Engineering Target Applications Graphics	Santa Clara, CA 95051 (405) 980-0755	Major Market: Computer	1675 W. 5th St
	Major Markets: Cornouter	Manufacturing	Long Beach CA 90613 (213) 437-0186
Head of Marketing Sales Robert	Mirwingturns OEM Computer	Target Industries: Engineering Scientific, Education Professional	Major Markets: Computer and
Head of Software Ray Moorman	Systems Contacts:	CADICAM	Terminal Manufacturing, OFM
	Head of Sales Michael Newman	Yarget Applications: Field Service Net Sales: \$1 Milion - \$5 Milion	Computer Systems Terget Industries: Education
Rehardson	Geographic Coverage, International Year Established, 1982	(1962)	
Geographic Coverage: International Year Established: 1960	Number of Employees 40	Contacts: Head of Marketing: Harvey Mushman	Contacts:
Mumber of Employees: 30		Geographic Coverage: International	"Head of Marketing Art Brent Head of Software Antonius W
	GAVILAN COMPUTER CORP.	Geographic Coverage: International Year Established: 1977	
FOUR-PHASE	240 Hackmidy St Campbel CA 95008	Number of Employees: 100	Head of Engineering John C. Derjany
SYSTEMS, INC.		GOLDEN WEST COMPUTERS	Generality Courses National
Suis 1132 17 Sattery Place	Major Markets: Computer Manufacturing Design Distributor	60 North 300 West	Geographic Coverage: National Year Established: 1952 Humber of Employees: 150
		Provo UT 04601 (801) 377-2177	Number of Employees: 150
(408) 255-0900 Major Markets, Componers,	Field Auditors		HARDY COMPUTER CORP.
	Contacts: Head of Marketing John Dutly	Computer and Perpheral Manufacturing, Software House	11430 Deston Drive ** Dates, TX 75029
Communications Equament		Manufacturing, Software House Net Sales: \$100,000 — \$500,000	
Manufacturing, OEM Computer Systems, Systems House (OEM)			Major Markety, Corner ner
	Geographic Coverage: International Year Established: 1982	Contacts:	Manufacturing Net Sales: \$100,000 — \$100,000
Mantenance Other Services	Number of Employees: 70	Head of Sales Keth Averytt	(1961) Reference \$100,000 — \$500,000
Target industries Manufacturing.	GENERAL AUTOMATION, INC.	Geographic Coverage: International Year Established: 1977	
Medical Government, Business Het Sales: More than \$100 Million		Number of Employees: 17	Head of Engineering H S. Hardy II Geographic Coverage: Infernation Year Established: 1979 Humber of Employees: 12
(1981) Centacts:			Year Established 1979
Head of Marketing Tony Yates	Arienem CA 92503 (714) 778-4900	GOULD, INC.	Humber of Employees: 12
	Major Markets: Contractor	SEL Computer Systems Division 6901 W. Sunnse-Silvid	HARRIS CORP.
Geographic Coverage: International Year Established: 1969			
Number of Engleyees: 4 500	Maintenance/Other Services Terget Industries: CEM Systems	(305) 587-2900 Major Markets: OEM	2100 W Cyprus Creek Road
	Houses Burking Target Applications: Industrial		2102 W Cyprus Creek Road Ft Lauderdale PL 33310 - (305) 974-1700
FRANCHISE MAILING SYSTEMS	Target Applications: Industrial		Major Markets: Computer
3420 W Capital Drive	Automation Net Sales: More than \$100 Million	Target Industries: Acrospace Mirary, Nuclear, Fossi Fuel	Manufacturing, OEM Computer
	(1981)		Systems, Software House - Memberance Other Services
(414) 444 9980	Contacts:		Yerest Industries: Scientific
Major Markets: OEM Computer Systems, Data Services	Head of Margeting Donald Heat Head of Customer Service Shirley	Montoring/Control, Lab Computation, Factory Automation	Maritmanico-Other Services Yarget Industries: Scientis; Engineering Education Tenget Applications: Simulation, CAD CAM
			CADICAM
Manufacturing Target Industries: Barn. Retail	Geographic Coverage: International Year Established: 1907	Head of Marketing John Muczko	Net Sales: \$25 Million \$100 Million (1981)
	Number of Employees: 1 700	Head of Sales Calvin Shoemaker Head of Software Robert Bergman	Contacts:
Head of Maketing Software Mark		Head of Engineering Michael Smith	Heat of Sales J Oromanor Heat of Software Joe Payre
Head of Sales Glern Bucott	ST N. Mart St	Head of Engineering, Michael Smith Geographic Coverage: International Year Established: 1581	Head of Software Joe Payne
Geographic Coverage International Year Established: 1962		Number of Employees: 2,500	Geographic Coverage: Intervation Year Established: 1987 Number of Employees: 1,000
Number of Employees: 65	(414) \$73-6800 Major Markets: Component and		Number of Engloyees, 1,000
		GOULD, INC.	HARTRONIX, INC.
PRANKLIN COMPUTER CORP.		Factory Automation Division 10 Pine St. Extension	
7030 Colonal Highway Pennssuken, NJ 08109	House Net Sales: \$1 Milion \$5 Milion	Nashua, NH 03050 - 15001 980-6543	Tempe AZ 85251 (802) 965-7215 Major Markets: Computer and
		Mejor Merkets: Dealer/Distributor	18021 986-7215
Major Markets: Component, Computer and Peopheral	Contacts		Terminal Manufacturing CEM
Manufactures Software House	Head of Sales Donald World	Computer Manufacturing, OEM Computer Systems	Terminal Manufacturing OEM Computer Systems, OEM Perpherals/Terminals, Software
Manufacturing Software House Geographic Coverage: International Year Established: 1981	Head of Engineering Barbara Pick Head of Customer Service Glenn	Target Industries: Manufacturers	House
Number of Employees: 113		Terget Industries: Manufacturing Yarget Applications: Production Control Process Control	Target Industries: Automotive Topi
	Geographic Coverage; International Year Established: 1974	Control Process Corerol Contacts:	Equipment Menufacturing
FRIENDS AMS, INC.	Number of Employees: 50		Target Applications: Language Automotive Testing, Forth Language Net Sales: \$500.00 — \$1 Miles
San Francisco CA SA133	AURIY	Geographic Coverage: National Year Established: 1976 Naviber of Employees: 50	Net Sales: \$500 00 - \$1 Mison
Sen Francisco, CA 94133 1415/908-2800 Major Market Computer Manufacturing	OMEX, INC. 1337 W 37th Place	Number of Employees (C)	(1981) Contacts:
Major Market: Computer	Chicago II. 60609 (312) 927-5510		Head of Engineering John R. Hart Geographic Coverage: Rational Year Established: 1975 Number of Employees: 10
Manufacturing Target Industries: Manufacturing: Destibution, Government	(312) 927-5510	ORID SYSTEMS CORP.	Geographic Coverage: National
Defibution, Government	Major Markets: OEM Computer Systems, Computer Manufacturing - Temper Indicatrics: Designs	2535 Garcia Ave Mountain View CA 94043 (415) 981-4600	Number of Employees 10
Heart of Marketon: Iron Court	Target Industries: Dealers	(415) 981-4600	
	Contacts: Head of Marketing Richard Don	Major Merkets: Computer Manufacturing, Software House Terget Industries: Fortune 1000:	HEATH CO.
Geographic Coverage: International Year Established: 1975 Mumber of Employees: 50	Geographic Coverage International Year Established: 1975	Target Industries: Fortune 1000:	Berton Harbor M 49022 IS16: 962-3200
Number of Empirement 50	Year Established: 1975 Mumber of Employees: 15		Major Markets: Design Destributor
		Year Established 1979	Manufacturery OFM Computer
POURTSU	GAR, ING.	Geographic Ceverage: National Year Established: 1979 Number of Employees: 200	Major Markette: Design Distributor: Computer, Termenal and Peopheral Manufacturing: CEM Computer Systems: Software House Target Indication: Small Business. Excustion: Process Control
PUJITSU MICROELECTROMICS, INC. Professoral Microsystems Division 3320 Scott Styd	1049 E Burprove St Carson CA 90746 (213) 639-4663	ORIFFIN TECHNOLOGY, INC.	Target Industries: Small Business.

Geographic Coverage: International Year Established: 1930 Humber of Employees: 1,500 HEURIKON CORP., 3001 Letham Drive - Maddon, WI 53713	HOUSTON ENGINEERING	Head of Sales Enc Wang Head of Sobware David Chang	
HEURIKON CORP. 2001 Latham Dryc -		Head of Engineering Chan A. Yen 'Head of Customer Service George	INDEP, INC. 2900 Tumpae Dree
2001 Lathare Drive -	RESEARCH CORP. 7250 Wyrrwood Drive	Team	Building No. 2 P.O. Box 677
		Geographic Coverage: Far East Year Established: 19/2	Wildow Grove PA 1909
	Houston, TX 77001	Humber of Employees: 55	
(608) 271-8700	(713) 669-9371 Major Markets: Computer		Major Marketz, Computer Manufacturing OEM Con
Major Markets: Communications Equipment, Component and		BLENE MIDUSTRIES DATA SYSTEMS, MIC. 301 Starry Brd Sebyvie TN 37160 P5150 664-8731	Manufacturing OEM Con Systems, Maintenance O
	Terminals and Computer Systems, Software House, Systems House	301 Stanley Blvd	
Computer Systems	Software House, Systems House	Sebyvie ÎN 37160	
Target Industries: Communications Net Sales: \$1 Milion — \$5 Milion	(OEM) Montenance/Other Services Target Industries: Cherrical Paper	r6150 684 8731	Accounting Law Maruta Target Applications: Oct Accounting Inventory Wil
		Major Markets: Computer and Communications Equipment	Accounting formation Mr.
Contacts	Terget Applications: Supervisory		Management Contacts:
Head of Engineering Jeffrey Multiple	Correct and Outs Acquisition: Taria Gauging: Automotive Production	Services Target Industries: Xerox Corp	Contacts
Teer Established 1972		Signa Users, Engineering	Head of Marketing Ross Head of Software Dougle
Geographic Coverage: National Year Established: 1972 Humber of Employees: 30			Head of Economics A M
	(1961) Contacts:	Head of Sales John C Smen	Head of Engineering: A K Geographic Coverage: N Year Established: 1969
HEWLETT-PACKARD GO. 3000 Harryer St.	Head of Sales/Customer Service	Head of Software Raymond No. Head of Engineering Donald J	Year Established: 1969
			Number of Employees: 6
	Head of Engineering Joseph Dryer Geographic Coverage: International Year Established: 1960	Head of Customer Senace Run.	INFOREX, INC.
Major Markets: Component Computer Terrenal Perpheral and	Geographic Coverage: International	Crumbless Geographic Coverage: National Year Established: 1961	186 Middlesex Tripk Burington MA .01803 (617) 272-6470
Office Equipment Manufacturing	100 20000000 1900	Geographic Coverage: National	Buringson MA .01803
	1000	Marrisor of Employees: 15	
	Old Orchard Road Armonic NY 10564		
Software House Terget Industries: Engineering	(914) 765-1900	IMS INTERNATIONAL 2000 Lockhed Way	
		Correct Course NV 60701	(CEM), Software House
Terget Applications: Office Automaton CADICAM		Carson Coy. NV 89701 (702) 883-7611	(CEM: Sofware House Target Industries: Manut Relat. Government
Automation CAD/CAM	Communications Equipment and	Major Markets: Computer and Peripheral Manufacturing, OEM	
Net Sales: More than \$100 Million (1981)	Office Equipment Manufacturing. Software House, Data Services.	Peripheral Manufacturing, OEM Computer Systems	Management Contacts:
		Ternet industries Communicati	Head of Sales Gene Park
	Maintenance/Other Services.	Target Industries Commercial Target Applications: Graphics Met Sales: \$5 Million — \$25 Million	
Head of Sales. Jim Arthur Head of Software. Andre Schwager	Miscelaneous Computer Supplies Het Sales: More than \$100 Million	Not Sales: \$5 Million - \$25 Million	
Generalist Commencer International		(1982) Contacts	Geographic Coverage in Year Established: 15(6) Number of Employees: 3
Geographic Coverage: International Year Established: 15(2)	Contacts	Head of Marketing Al Fiegeleri Head of Sales Richard Walace' Head of Software Joe Carter Head of Customer Service Jim	Humber of Employees: 7
Number of Employees: 67 000	Head of Customer Service. Thomas M. Liptak	Head of Sales. Richard Walace'	
HITACHI AMERICA, LTD.	Generatic Courses international	Head of Software Joe Carter	SECS PRICHERS SYAYES SECS PRICHERS COPPERS E NOTOROUS, GA 20092 (404) 449-0130
	Geographic Coverage: International Number of Employees: 350,000		Noncress GA 30092
Doraville GA 30360 (404) 458-0921	ICL. INC.	Geographic Coverage: International Year Established: 1978	(404) 449-0130
(404) 458-9921 Major Markets: Component	Suite 300	Number of Employees: 105	Major Markets: Oth Con
Computer Communications		MUMBER OF EMPLOYMENT 105	Controller Manufacture
	IVING TX 75062 (214) 256 8525	INCOMMET, INC.	el04: 449-0130 Major Markets: OEM Con Systems: Software House Computer Manufacturing Target Induserses: Medica Target Applications: Dury Contacts:
Minutecturing Terget Industries: Telephone: Distribution, Commercial		2772 Johnson Drive	Tarpet Applications: Dury
Distribution Commercial	Manufacturing	Vertura CA \$3003 (805) 654-1618	Head of Marketon Keet E
	Manufacturing Terget Industries: Resal.	Matter Markets: OEM Corrouter	Head of Marketing Kurt Fi Geographic Coverage: In Year Established: 1971
Head of Sales: Charles Kennore		(00) 664-1616 Major Markens OEM Computer Systems Software House Data Services Computer Manufacturing Target Industries; Franciscus, Ingurance, Automotive Auties Target Applications, Miniscage Switching, Accounting Inventory Continues.	Year Established: 1971
Heed of Engineering Wally lives	Contacts:	Services Computer Manufacturing	IMPOTECS, INC.
Heed of Engineering Wally lives Geographic Coverage: International Year Established: 1973 Humber of Employees: 50	Contects. Head of Marketing Ron Krychyo Geographic Coverage: National Year Established: 1572 Namber of Employees: 55	Insurance, Automotive Artine	t Permeter Road Merchester No. 03103
Number of Employees: 80	Geographic Coverage: National	Target Applications: Message	Merchester M4 03103
	Mumber of Employees 55	Contacts:	(663) 624-2700
HONEYWELL, INC.		Head of Marketing/Super Ray Heady	Major Markets: OEM Corr Systems Computer Manual
riomation Systems Division	IDEOGRAPHIX, INC.	Head of Engineering Gian Kelley	Target Industries: Accoun
Information Systems Division Honeywell Plaza Minnespolis MN 55408	532 Mercury Drive Surreyvale CA 94086 (408) 735-1290	Head of Marketing-State: Ray Heady Head of Engineering Glan Kelley Geographic Coverage: National Year Enablished: 137 Mamber of Engityapa: 48	Systems Computer Manual Target Industries: Account Insurance Contracting, Me Target Applications: Fuel Accounting Job Costing F Management, Medical Costerior
	(408) 739-1290	Marrier of Continues 45	Target Applications: Fuel-
Major Markets: Computer, Terrival.	Major Marketz: Computer, Terrenal		Management, Medical
Pengheral Communications	Perpheral and Communications	MOEPENBENT BUSINESS	Contacts:
Manufacturing, OEM Pengherats:	Persterals/Terrenals and Committee	SYSTEMS, ING.	Head of Murketing, Canvill
Manufacturing, OEM Pengherate: ferminals and Computer Systems.	Systems, Data Services, Systems	SYSTEMS, INC. SYSTEMS, INC. SYSTEMS, INC. SYSTEMS COURT LIVERTON CA. \$4550 (415) 443-3131	Head of Marketing, Canon's Head of Sales, Jack Flyen Head of Engineering, Josef Geographic Coverage: Na Year Established, 1975 Mareter of Employees: 15
Software House, Data Services. Dealer Distributor,	House (DEM) Marrierlance/Other	(415) 443-3131	Geographic Coverage: Na
Santenance Other Services	Surprises	Major Marine Congular	Year Established: 1975
dantenance Other Services Terget Industries	Torget Industries: DP and	Torget Industries: Engineering	- Companies 15
	Mager Manekt: Computer, Terrenal, Perphrai and Communications Equipment Manufacturing, OEM Prephrai and Computer Systems Data Services, Systems House (CAI) Manneralmost Computer Systems (CAI) Manneralmost Computer Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support Support	Maper Market: Computer Manufacturing Target Industries: Engineering: Scientific Compari Suariess Mel Sales: \$500,000 — \$1 Million	INNOTROMES CORP.
		Net Sales: \$500,000 — \$1 Million (1982)	Brocks Road Lincoln MA 01773
Contacts: lead of Marketing Richard R			
tead of Marketing Richard R Douglas	(1961) Contacts:	Head of Marketing Dick Class Geographic Coverage: International	(517) 259-0600 Major Markets: Computer: Perpheral Manufacturing

Target Industries: OEM, Depressors	6th Floor Rodaville MD 20852	Geographic Coverage: National Year Established: 1966	Number of Employees: 120
Not Sales: \$1 Milton — \$5 Milton (1981)		Plumber of Employees: 10	JOHOS, LTD.
	Major Markets: Systems House (OEM), Corputer Manufactures	INTERBIL SYSTEMS, INC.	1835A Dentis Way Fullerton, CA 92631
	Target Industries NASA.		(714) 520-0492
Geographic Coverage: Regional Year Established: 1977	Net Sales: \$500,000 — \$1 Million		
Number of Employees: 22	(1961)	(408) 996-5000 Mejor Markets: Component and	Manufacturing
INSTRUMENTATION	Contacts: Heed of Marketing Ratch Crafts		Mappe Market Computer Manufacturing Target Applications: POS Geographic Coverage: Internation Year Established: 1900 Number of Employees: 30
	Geographic Coverage International	Target Industries: OEM .	Year Established: 1980
Pixel Division 1 Burth Road	Geographic Coverage: International Year Established: 1978		
	Number of Employees: 20	Head of Engreening Jen Krenbur Geographic Coverage: National Year Established: 1981	KONTRON ELECTRONICS 530 Pres Ave
(617) 861-0710 Major Markets: Computer and	TECHNOLOGY, INC.	Year Established: 1981,	Redwood City, CA 94063
Terrynal Menufacturing Terget Industries: OEM, Medical Met Sales: Under \$100,000 (1981)	Suite 11	INTERTEC DAYA SYSTEMS	(415) 361-1012
Target Industries: OEM, Medical	5250 N. Taccoma Ave		Major Meriot: Computer Manufacturing Terget Industries: OCM Not Seles: More than \$100 Million
	Indianapolis IN 46220 (317) 253-5760	2300 Broad fliver Road	Torget Industries: OEM
Head of Engineering, James McHale Geographic Coverage: International Year Established: 1990	Meier Market: Computer	Columbia, SC 29210 (803) 796-9100	(1981)
Teer Feliablished: 1991	Manufacturing Contacts:	Major Market Computer Manufacturing	
Mumber of Employees: 120		Contacts:	Heed of Marketing: Dennis Dolan
-	Machineyer Geographic Coverage: International Year Established: 1982		Geographic Coverage: Internation Year Established: 1970 Number of Employees: 40
COMPUTERS, INC. (INC) 21592 Marie St	Tear Established: 1202	Geographic Coverage: International Year Established: 1973 Number of Employees: 400	
21592 Marite St	Munber of Employees: 7	Manber of Employees: 400	LABORATORY
Chatsworth CA 91311 (213) 882-9007 Maker Market Computer	INTER-CARE SYSTEMS, INC.	IPL SYSTEMS, INC.	LABORATORY TECHNOLOGIES COMP. 306 Brookey Cambridge, MA 02138 (617) 497-1019
Major Market: Computer			Cambridge MA 02138
Manufacturing Target Industries: Manufacturing:	Los Angeles, CA 90025 (213) 826-4600	Waltham MA 02254	(617) 497-1010
Barring General Business		Major Markets: Cornouter	Major Markets: Computer Manufacturing, Software House Target Industries: Scientific
Year Enishibitate 1979	Manufacturing, Software House,	Manufacturing, Maintenance/Other Services	Terget Industries: Scientific, Machine Control, Process Control
Geographic Coverage: International Year Established: 1979 Manufact of Employees: 27	Services, Dealer Distributor	Het Sales: \$5 Million - \$25 Million	Contactor Contact Process Contact
INTEGRATED DIGITAL	Systems House (OEM) Date Services, Dealer Distributor Target Industries: Medical Net Balles: \$1 Million — \$5 Million	(1981) Contacts:	Heed of Sales Fredrick Pulnam
PRODUCTS 3154 E La Paive			Head of Customer Service: David Wilson
	Contacts: Head of Marketing Paul Marchets:	Manser Heed of Software, Charles A. Cornel	Geographic Coverage: National
Avahert CA 92506	Geographic Coverage: National Tear Established: 1979	Head of Costomer Review Lee	Geographic Coverage National Year Established: 1991 Number of Employees: 9
(714) 632-6972	Year Established: 1979 Humber of Employees: 30	Head of Customer Service Lee Gendron	
Major Markets: Computer and Peripheral Manufacturing Software		Generalis Courses National	LAMEX BUSINESS
Target Industries: Systems Houses	INTER CITY PAPERS, LTD.	Geographic Ceverage National Year Established: 1973 Number of Employees: 250	PRODUCTS, ISC. 1200 Chantly Drue N.E. Atlants, GA 30024
Geographic Coverage: International		Humber of Employees: 250	Atlanta, GA 30024
Geographic Coverage: International Year Established: 1979 Humber of Employees: 5	Springfets OR 97477 (503) 726-7613	ITHACA DITERSYSTEMS, INC.	(404) 329-8080 Major Markets: Computer and Office
		1650 Henshew Road P.O. Box 91	Equipment Manufacturing, Software House
INTEL CORP.			
System Grove 2402 W Beandstey Fload	Geographic Coverage: National	(637) 273-2500	(1962)
Phoens, AZ 55027 (602) 869-3805 Mejor Markete: Corrector and Bacobian Markete: Corrector and	Geographic Coverage: National Year Established: 1973 Mumber of Employees: 5	Major Markets: Computer and Terronal Manufacturing, Software	Head of Marketing, George De
Major Markets Committee and	INTERNATIONAL PATRY		
Pergheral Manufacturing, Software House		Target Industries: Dealers, OEM Target Applications: Graphics.	Geographic Coverage: International Year Established: 1934 Number of Employees: 3,000
Geographic Coverage: International	408 N E 72N3 S1	Not Sales S! Miller - 55 Miles	Number of Employees: 3,000
	Seattle, WA 98115 (206) S95-6600 Major Markets: Computer and	(1982)	
Humber of Employees: 20,000	Major Markets: Computer and		1050 E Quare Ave.
INTELLIGENT SYSTEMS	Terminal Manufacturing, Software House	Heed of Marketing/Sales Play D Onotho	Surryvele, CA 94086
225 Technology Park	Target Industries: Service Bureaus		Major Market Computer
Noverces, GA 30092	Target Industries: Service Bureaus Target Applications: Data Entry Het Sales: \$1 Million \$5 Million	Geographic Coverage International Year Established: 1979	Manufacturing
(404) 449-5961	(1961)	Humber of Employees: 100	Terpet Applications, inventory
(404) 449-5961 Major Markete: OEM Computer Systems, Computer and Terminal Manufacturing, Maintenance: Other	Head of Marketing/Seres, Larry	ITHAGO, ING.	LALDON SYSTEMS, INC. 1005 E DUTE Are. Surryvisis, CA 94069 - (400) 725 - 138 Major Marriar Target Applications: Invasiony Connect, Purchaserg, POS Connectics Connectics Connectics Connectics Connectics Connectics Connectics
Manufacturing, Maintenance Other		Compudes Division	Head of Manuation Person Known
Terral Industries Council Landers	Geographic Coverage: International	P O Box 6437	Geographic Coverage: International
Business Graphics. Measurement Testing	Geographic Coverage: International Year Established: 1979 Number of Employees: 25	Mheca, NY 14850 - (607) 272-7640	Heed of Marketing Robert Knapp Geographic Coverage: Incomations Year Established: 1978 Number of Employees: 25
		Major Merkets: Computer Manufacturing, OEM	
	INTERNATIONAL TELECONTROL COMP.	Perichania/Terminaia	LEXOR CORP. 7100 Heyverhurst Ave
Geographic Coverage: Interrutional Year Established: 1973 Humber of Employaes: 375	PO Box 96	Peripherala/Terminals Target Industries: Manufacturing: Power Generation	7100 Hayvenhurst Ave Van Huys, CA 91408 (213) 786-1800
Humber of Employees: 375	Edgement, PA 19028 (215) 353-3232		(213) 786-1800 Major Market: Computer Manufactures
	Major Market Computer .	(7961)	Manufacturery

Contacts: Hood of Marketing Mike Connors	14101 Myland Road Tustin CA \$2580	IOFM. Company Managers area	Contactor
Head of Marketing Mike Connors Geographic Coverage: International	Tustn CA 92680 (714) 731-5100	Torget industries: Barring, Chemical Distributor	Contacts: Head of Marketing Wordell A. Kaner
Geographic Coverage: International Year Established: 1979 Humber of Employase: 60	Major Mertet: Computer Manufacturing	Her Seiner St Jahren - Si Latine	Head of Engineering Jerry A. Hor Geographic Coverage: Interneto
LNW RESEARCH CORP. 2520 Wallet	Target Industries Manufacturing Distribution, Legal, Membership Net Sales: More than \$100 Million	(1961) Geographic Coverage: International	Geographic Coverage Internatio Year Established: 1978 Humber of Employees: 42
Tuetin, CA 92550 (714) 541-8650		Geographic Coverage International Year Established: 1951 Number of Employees: 40	SHORD SOUTHER, MC. 595 N Clayton Road
Major Markets: Correcent and	Contacts: Heed of Marketing William F Rigby	MEPCOM INTERNATIONAL,	
Computer Manufacturing. Dealer/Deinburg	Geographic Coverage: International Year Established: 1971	16181 Business Are	S12 667-1365 Major Morkete: DEM Computer Systems, Computer Manufacturer Target Industries; Industries Miles Net Sales: \$1 Million — \$5 Million
Terget Industries: Srsal Business	Humber of Employees: 1,000	Dates, TX 75234 (214) 464-0640	Systems, Computer Manufactures
Heed of Marketing: Ken Woog	MARTEC INTERNATIONAL	(214) 464-0640 Major Markety: Parameral and	Torget Industries, Industrial Miles
Hood of Marketing: Ken Woog Geographic Coverage: International Year Established: 1979 Number of Engloyees: 40	20 Wilam St Wellesiny, MA 02181 (617) 237-2115	(214) 664-(565) Major Mankets: Perpheral and Computer Manufacturing Tanget Industries: Manufacturing: OEM: Flestaurant	(1962) Contactor
	(617) 237-2115 Major Markets: Company	OEM: Restaurant Target Applications: Restaurant Management	Head of Marketing/Sales Walace Cauper
HTERNATIONAL S6 5 Farney Ave	Major Marketa: Computer Manufacturing, Dester/Distributor	Management Not Sales: \$500,000 \$1 Milion	Head of Software Wayne Wenth
356 S Farnew Ave	Manufacturing, Deater/Distributor Tempet Industries: DEM Net Sales: \$25 Million — \$100 Million (1960)		Head of Software Wayne Wersch Geographic Coverage: Internation Humber of Employees. 25
Goleta, CA 83117 (805) 663-1576		Geographic Coverage: National	
Golda, CA 80117 (805) 603-1576 Major Markelia: Computer and Purpheral Manufacturing Net Salare; \$5 Million — \$25 Million (1901)	Head of Marketing Ted Yoshida Head of Sales Keith Lahas	Geographic Coverage: Notional Year Established: 1980 Number of Employees: 20	2005 Historough St P O Bon 12/105 Rategy AC 27405 (919) 833-1456
Net Sales: \$5 Million - \$25 Million		MICROCOMPUTER	P O Box 12106
Contacts:	Geographic Coverage: International Year Established: 1974 Humber of Employees: 45	3304 W MICATEL DVG	Ralegh NC 27605
Heed of Marketing Doug Rex	Humber of Employees: 45		Major Markets: Computer
Geographic Coverage: International	MASSCOMP	Major Markets: Component and	(919) 633-1456 Major Markets: Computer Manufacturing Software House; OEM Computer Systems Terpel Applications: Laboratory, tell-self-
Head of Marketing Doug Rex Head of Engineering Kirk Hobert Geographic Colverage: International Year Established: 1979 Number of Employana: 40	SA3 Great Road Littleton, MA, 01460 6177 665-625 Major Markets: CEM Computer Systems, Computer Manufacturing Target Industrias: Engineering, Specific COM	(714) 879-9823 Major Markens: Component and Computer Manufacturing, OEM Computer Systems, Systems House (OEM)	Terget Applications: Laboratory.
LOGICAL BUSINESS MACHINES	Major Markets: OFM Cornector	(OEM) Terget Industries; Retail	Contacts: Head of Marketing W.S. Smith Geographic Coverage: Intervelop Year Established: 1977 Humber of Employees: 15
	Systems, Computer Manufacturing		Geographic Coverage: Internation
1294 Hammenwood Ave Surryvise, CA 94086 (408) 744-1290	Sounding OEM	Geographic Coverage: International	Number of Employees: 15
	Target Applications: Computation. Graphics	Heed of Marketing: Paul Gans Geographic Coverage: International Year Established: 1979 Mumber of Employees: 45	MORO V CORP.
Marufacturing Net Sales: \$25 Million — \$100 Million (1981)			17791 Sky Park Circle
Milion (1981)	Head of Marketing Allen L. Walleck Geographic Coverage: National Year Established: 1581 Number of Employees: 45	4000 McArbur P.O. Box 19901	CTAN BAT MAIT
Head of Marketing Andrea Show-	Humber of Employees: 45	Inine. CA 92713	Major Marketa: Component and Computer Manufacturing, OEM Computer Systems, Software House
Gordon Geographic Coverage: international	MEASUREMENT SYSTEMS &	(714) 540-8730	Computer Systems, Software House
Geographic Coverage International Year Established: 1974 Humber of Employaea: 100	CONTROLS, INC. Systems Group	P.O. Box 19501 invies. CA. 82713 (714) 540-8730 Major Markets. Computer, Terrenal and Peoplema Manufacturing Terget Industries: General Buspess Centerts.	Head of Marketing Seles Mark
MAD COMPUTER, INC.	1601 Orangewood Ave Orange, CA 92668 (714) 633-4460	Contacts:	Head of Software: Art Shahan
	(714) 633-4460	Head of Sales John R. Boone Geographic Coverage International Year Established: 1909	Levis Head of Software-Art Shahan Head of Engineering Bruce Mary, Geographic Coverage: Internation Year Established: 1 E77
Building 13 Santa Clara, CA 95057 (408) 980-0840	Major Markets: Component. Computer and Peopleral Manufacturing	Year Established: 1900 Humber of Employees: 3 000	Your Established: 1877
(408) 980-0840	Manufacturing Terget Industries: Education		MOWEST SCIENTIFIC
Major Market Computer Manufacturing	Government Courseon	1620 Morecomery St	220 W Corn St
Terget Industries: Barking, Medical, Telecoversumcations, Commercial	Government Tempet Applications: Accounting, Inventory, MP	San Francisco, CA 94111 (415) 398-0289	Olefte ICS 86061
Head of Sales Part School		Major Market Computer	Major Markets: Computer and
Head of Sales Paul Schaut Geographic Coverage: International Year Established: 1982 Humber of Employees: 20	Head of Engineering Lowel Durin	Target Industries: CEM -	Computer Systems
Humber of Employees: 20	Head of Engineering Lowel Durin Geographic Coverage: International Year Established: 1878 Humber of Employees: 45	SMCINDNATYDOR, ISSC. 1502 Montgomery St. 1502 Montgomery St. 1515 Montgomery St. 1515 July 1515 Montgomery Mon	SNOWBET SCHENTIFIC INSTITUTIONSTITE, SNC. 220 W Cace St. Cesha KS. 80051 S13/764-237 Major Martenia. Computer and Martenia. Computer and Martenia. Computer and Martenia. Computer Systems, Martenia. St. Martenia. SHE State. 31 Marten — SS Million (1981)
MACHUSON COMPUTER		Head of Marketing James Blatz	Het Selee. \$1 Million — \$5 Million (1981)
SYSTEMS, INC. 2002 Orthard Prove.	MIRRADAYA CORP. 35 Ovele Dive	Heed of Marketing: James Statz Heed of Sales E Sciental Geographic Coverage: International Year Established: 1977 Namber of Employees: 100	Geographic Coverage: National Year Established: 1970 Namber of Employees: 10
Sen Jose, CA 95134	Bohema, NY 11716 .	Your Established: 1977	Mumber of Employees: 10
Major Markets: OEM Computer	Major Markets: Computer and Office		
BYBTEME, 800, 2002 Orbitard Prevy San Jose, CA 95134 (A08) 948-8100 Major Mediatric OEM Computer Systems, Computer Mascrischumg Net Sales S26 Million — \$100 Million (1981)	SO CYME LIVE 11715 (516) 589-5800 Major Markets Computer and Office Equipment Manufacturing Net Sales: \$1 Million — \$5 Million	SYSTEMS, INC. 215 Cardice Dave	3826 Quanartridge Road
Allion (1981) Contactor		215 Candace Drive	(806) 890-0440
Heed of Marketing Jerome J Burke	Geographic Coverage: International Year Established: 1967 Humber of Employees: 150	Martend, PL 32751 (305) 834-2393	Microsoft Systems Coder. 32:8 Culestrings Road Microsofts RJ 08615 (60) 800 04400 Major Microsoft Computer Manufacturing. Microsomor Other Manufacturing. Microsomor Other
Head of Marketing Jerome J Burke Bengraphic Coverage: International Year Entablished: 1977 Humber of Employees: 205		and Perpheral Manufacturing CEM	Services Target industries: OEM, Industries,
	HEGANIST CORP. 806 Pt. 17	Computer Systems	Met Selec: \$100,000 \$500,000
MANAGEMENT ABBIETANCE,	Raveey, NJ 07446	(30): 804-2935 Major Mahriston: Terrenal, Cignouler and Perspheral Manufacturing, OEM Computer Systems Tenget Industrias: CEM Tenget Applications: CPM, MP/M Mot Bales: \$1 Million — \$5 Million (1981)	(1981)
Basic Four Division	Major Markets: Systems House	(1981) — 80 Million	Heat of Sales Bren Potent

Head of Scrivine record verse Head of Engineering Joseph Gurne Geographic Coverage: National Year Established: 1975 Number of Employees: 15
Number of Employees: 15 MINI-COMPUTER SYSTEMS,
399 Farvew Park Drive Emisland, NY 10523 10141 500-8010
Major Markets: Systems House (OEM), Software House: Computer Manufacturing
Het Sales: \$5 Million — \$25 Million (1981) Contacts:
Contacts: Jen Torricos Head of Sales: Jen Torricos Head of Software: Chris Sanders Geographic Converge: National Year Established: 1909 Number of Employees: 150
Marber of Employees: 150 MITSUBISMI BLECTRONICS
Computer Division 991 Knew St. Compton, CA 90502
(213) 515-3993 Major Marketic Computer, Terranal and Perpheral Manufacturing: OEM
House, Dealer Destrouter: Mantenance Other Services Terest Industries: Manufacturing:
Contractors Target Applications: Accounting Data Entry Het Sales: More than \$100 Million (1981)
Data Entry Net Sales: More than \$100 Million (1981) Geographic Coverage: National Year Established: 1978 Number of Employees: 100 NODULAR COMPUTER \$YSTEMS, INC. (NODCOMP)
Number of Employees: 100 MODULAR COMPLITER
Ft Laucerdele, FL 33310 (305) 974-1380
Major Merkets: Computer and Communications Equipment Manufacturing, Maintenance Other
Services Target Industries: Process Control: Communications: Viewdella, Power Generation
Hel Sales: \$5 Million — \$25 Million (1962) Contacts:
Hamson Head of Engineering, Gabriel Rosica Head of Customer Service Jess
Sangraphic Coverage: International Year Established: 1970 Number of Employees: 1,500
MODUTESY SYSTEMS, MIC.
Phoenix, AZ 85029 (502) 944-0365 Major Morbetts: Computer
Manufacturing: OEM Perpharato/Terminals, Dealer/Distributor
Target Industries: Government, Trins-Sharing Target Applications: Rael-Time Processing, Government Training, 17/5 Net Ballet: \$1 Million — \$5 Million
(1981) Contacts:

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Heart of Software Harold Herzin
                                                                                                                                         MONAMY DATA SCIENCES
CORP.,
7 Carnay Drive
Parsippiny, NJ 07554
(201) 549-9080
(Reper Members: Computer, Terrinal
and Peripheral Membershame,
Scrimate Hosel
Scrimate Hosel
Banking, Sports
Net Sales More Yan $100 Million
(1951)
                                                                                                                                         Contacts:
Head of Marketing Brian S Geylord
Geographic Coverage, International
Year Established: 1954
Number of Employees: 5,300
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Buthilo, NY 14203
(716) 845-5000
Major Market Computer
Marchachuring
Target Industries: Aerospace:
Coverment, Education
Net Sales: 31 Million — 35 Million
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NEC INFORMATION SYSTEMS,	Head of Sales. Robert Davis Head of Software. Philip Colgungs	Head of Sales S.T. Opperhamer Head of Customer Service: J.	Terget Industries: Engine Manufacturing, Research Geographic Coverage: In Year Established: 1975 Number of Employees: 6
5 Militia Drive	Geographic Coverage International Year Established: 1952		Opposed Common to
Laxogion, MA 02173	Year Established: 1952 Number of Employees: 1,500	Geographic Coverage: International	Year Established: 1976
617) 862-3120 Weger Markets: Software House,	Printed of Employees: 1,800	HORTHSTAR COMPUTERS.	Number of Employees C
Perphenii and Computer Wanufacturing	NHC ELECTRONICS	INC.	OCTAGON COMPLITE
Vanutacturing Ferget Industries: Pharmacoutical	15631 Computer Lane Huntington Beach, CA 92649 (714) 995-8000	MIC. 14440 Catalina St.	OCTAGON COMPUTES SYSTEMS 151 Burnet Ave.
	(714) 895-6000	San Leandro, CA 94577 - (415) 367-8600	151 Burnet Ave.
			San Jose, CA 95119 (408) 225-2700
feed of Marketing Harland K	Manufacturing Terget Industries: Government	Manufacturing Het Sales: \$5 Million — \$25 Million	(408) 225-2700 Major Market: Computer Marufacturing Target Industries: General Target Applications: General
Juigne Securativis Coverage: International Feer Established: 1577 Samber of Employees: 300	OEM CONSTRUCTION	Het Sales: \$5 Million — \$25 Million (1981)	Manufacturing
Foor Established: 1977	Net Sides: \$1 Million \$5 Million		Terral Applications: Garage
sumber of Employees: 300	(1962)	Head of Marketing Got Jerres Head of Sales Fitne Meyering Head of Software Dick Williamson	Purpose Centacts:
AFW FINDLEND PARTY.	Geographic Coverage: International	Head of Sales Rhine Mayering	Contacts:
NEW ENGLAND DIGITAL CORP. 10 N. Man St.	Geographic Coverage: International Year Established: 1979 Humber of Employees: 20		Head of Software Charles
O N. Man St.		Greenberg Head of Customer Service Donald	Generalic Coverses: In
O Box 546 Vivie River Junction, VT 65001 502; 255-5800 Rejor Markets: Computer Famulacturing, CEM Computer	NON LINEAR SYSTEMS INC.	Head of Customer Service Donald Watson	Head of Software Charles Head of Engineering Jose Geographic Coverage: In Year Established: 1982 Humber of Employees: 10
502) 295-5800	533 Stevens Ave Demar, CA 92104	Generalis Courses International	Plumber of Employees: 10
tejor Markets: Computer		Year Established: 1976	OLYMPIA U.S.A., INC.
ysters	Major Markets: Computer and Communications Equipment	Geographic Coverage: International Year Entablished: 1976 Humber of Employees: 330	
lystems larget industries: Communications. Auso	Manufacturing .	HOVELL BATA MANAGEMENT.	P.O. Box 22 Somerville, NJ 06876*
Ausic			Somerville, NJ 08878* (201) 722-7000
ontacts.	Head of Marketing David Key	1170 H Industrial Park Drive	Major Murkets: Office Equ
Auto Contacts lead of Marketing Brad Nacies lead of Software Jeff Reberg leagmable Coverage informational our Established: 1976 amber of Employees: 35	Head of Marketing David Key Geographic Coverage Wernstood Year Established: 1952 Number of Employees: 190	1170 M inclusive Park Drive Chem. UT 4657 (501) 224-4622 Major Markets: Component, Computer and Peopheral - Manufacturing	2011 722-7000 Major Marketis: Office Equi and Computer Manufacture Perpherali/Terrenals Net Balles: \$25 Million — \$ Million (1981) Centects:
leographic Coverege: kyternational	Humber of Employees: 160	Major Markets: Correspond	Net Seiner 525 Million - 5
eer Established: 1976		Computer and Perpheral	Million (1981)
or employees: 30	NORDEN SYSTEMS	- Manufacturing Contacto:	Contacts:
	P.O. Box 5300	Head of Marketing Red Clark Head of Sales David Bumgarder Geographic Coverage: International Year Established: 1981 Humber of Employees: 40	Head of Sales. Carl Robbin Geographic Coverage: Na Year Established: 1940 Humber of Employees; 20
716 Joy Road Syrecuse, NY 13057 1151 437-0621	Norwalk, CT 06856	Heed of Sales David Burngardner	Year Established: 1940
15) 437,0821	Major Markets: Component,	Geographic Coverage: International	Humber of Employees: 26
lajer Marketic Computer landecturing, OEM Computer yelteris, Systems House (OEM) angel Industries: Government; Mindscturing		Tool Communication (C)	
lanufacturing. OEM Computer			5717 Corns Ave
yelens, Systems House (OEM)	Systems, Systems House (DEM).	NUCLEAR BAYA, INC.	Western Vitage, CA \$13
Wr.Vacturno	Terral Industrias Military	Gof and Meachem Roads Schaumburg E. 60196	(213) 961-5610
erget Applications: Environment tonics: Machine Control	Systems, Systems House (OEM), Maintenance/Other Services Target Industries: Military Target Applications: Military, Seven Environment	Scharmburg, E. 60196 (312) 884-3800 Major Merkelat: Computer Merufacturing, OEM Computer Systems: Software House	GOMMENAYA 5717 Corse Ave Westeins Village, CA \$13 (213) 991-5910 Major Markets, Computer Equipment Manufacturing Tempet Indicatives: CA Contents
critice Mechine Control	Severe Environment	Major Markets: Computer	Terpet Industries: CA
neri of Marketina Depart Incomes	Contacts: Head of Marketing: William W	Manufacturing, CEM Computer	Contacts:
ecoraphic Coverson Matorial		Trend Indiana House	Head of Marksting George
contacts: coad of Marketing David Jennings obgraphic Coverage Mational ser Established: 1976 umber of Employees: 50	Head of Engineering Leo Botwin	Min/Jackuring, OEM Computer Systems: Software House Target Industries: Nuclear Target Applications: Radiation Detection Centacts:	Greensport Geographic Coverage: Na Year Established: 1975 Number of Employees: 10
	Geographic Coverage: International Year Established: 1928 Number of Employees: 6,000	Detector	Your Established: 1978
COLET INSTRUMENT CORP. 25 Verona Road adson. WI 53711 00; 271-3333	Number of Employees: 6 000	Contacts:	Number of Employees: 10
25 Verons Road		Head of Marketing Charles Long Head of Software, Raymond C.	
80900 Wt 53711	HORSK DATA HORTH AMERICAN, INC. 55 Wilen St		ONVX S VEYTEMS, INC. 25 E Trivitie Road Sen Jose, CA 65131 (408) 946-6330 Major Market: Computer Manufacturing
nior Markets Correspor	SS Wilson Or	Heed of Engineering, Gerald W	Sen Jose, CA 95131
ejer Markets: Computer anutschung, OEM Computer		Geographic Coverage: International Year Established: 1956 Number of Employaee: 200	Major Market Course
viens	(617) 237-7945	Your Established: 1956	Manufacturing
repet Industries: Scientific: opnering Medical repet Applications: Graphics, edical: Test: Analysical Mumeritation	Manufacturery OSM Computer	Number of Employees: 200	Manufacturing Hat Bales: \$25 billion \$ billion (1981)
irget Applications: Graphics,	Systems, Dealer/Datrison	OAKLEAT MIC	Campo (1981)
edical: Test, Analytical	Terpet Industries: Government	OAKLEAF, INC. 19737 Northolf Place	Head of Marketing: Tom An
regraphic Coverage: International ser Established: 1905 under of Employees: 1,100	(617) 237-7945 Computer Manufacturing (CEN Computer Synthems, Dealer/Darticupor Target Indicatricus; Government Geographic Coverage, Informational Year Established: 1507 Number of Employees: 1,000	PO Box 64230 Chatracath CA 51111	Contects: Head of Marketing: Tom An Head of Sales Mike Spac Geographic Coverage: Inte Year Established: 1979 Number of Employees: 120
or Established: 1965	Number of Employees: 1,000		Geographic Coverage: Inte
umber of Employees: 1,100		Major Markets: Component.	Number of Employees 120
XDORF COMPLTER CORP.	NORTHERN TELECOM, INC. Electronic Office Systems Director. Data Park	Computer, Terminal and Peripheral	
O Then Ave	Date Bed	Manufacturing, OEM Computer .	CONCENS COMPLITER (25400 Corporate Are
0 Theti Ave stram, MA 02154 17) 890-3800	P.O Box 1222 Minneapole, MN 55440	Major Man-Laci Major Markate: Component, Computer, Terminal and Perspheral Manufacturing, CEM Computer Systems, Desert Clearbusor Terget Industries: Barriang, Office Automation Centeries	25500 Corporate Are Heyward, CA 94048 Major Mankett Computer Manufacturing Target Industries: Personal Business Computer
7) 890-3600	Mirrespole, MN 55440	Office Automation	Major Market Computer
morter Terrent Buchers and	(812) 532 8000	Contects	Manufacturing
remunicatore Equipment	Personanti Communications	Generative Continues Interest	Tarpet Industries: Personal
17 (803-300) glor Markette Component, imputer, Terminal, Perspheral and immunications Equipment immunications, Software House, intrinsinos/Other Services instrumos/Other S	Equipment and Office Equipment	Head of Marketing Don Jackson Geographic Coverage: International Year Established: 1974 Number of Engloyees: 300	
emenance/Other Services	Manufacturing, Software House,	Number of Employees: 300	Head of Marketing Sales Go
reportation, Medical	Toront Industries Mandardon	COCCRYATIONAL EVETTING	
rget Applications: Accounting:	Banking, Government, Education		Head of Software: Shabons Head of Engineering Ed Ric Head of Customer Service. / Truescet
	Target Applications	1103 Grand Ave	Head of Customer Service.
			Truspost
Sales: More than \$100 Million			
(Sales: More than \$100 Million 61) Integral: ad of Marketing Mike Backler	812) 512-8000 Holper Earning, Health Markette, Computer, Terminal, Perspensil, Communications Chapterial, Communications Chapterial, Communications Chapterial Manufacturing, Software House, Martenanication Foundation, Temper Relationship, Education Target Auguston, Education Target Auguston, Education Target Auguston, Edit Entry, Commercia, Chapterial Markette, Personal Auguston, Commercia, Markette, Personal Auguston, Commercia, Commer	1103 Grand Ave Beante, WA 60122 (200) 329-3754 Major Marrist: Computer Manufacturing	Geographic Coverage: Intel Year Established: 1981 Number of Employees: 400

OSM COMPUTER CORP. 565 Clyde Ave Mountain View. CA 94043 (415) 981 9890 Mayor Market: Computer Manufacturing Geographic Coverage: International Year Established, 1980 Number of Employees: 70

Number or corpoperar no OTROMA CORP. 4755 Warus St. Boulder CD 80001 1003 464 8100 Blage Markett Computer Manufactures Manufactures Insurance Societies Feed Testing Insurance Societies Feed Testing Target Industries. Engineering insurance Scientific Field Testing. Coeffacts: Head of Marketing David III. Ridge Head of Safes. R. Gary Merich Head of Software. Evan M. Scharl Head of Engineering. Bosald R.

Lingerrann Head of Customer Service T Kim Blakesico Geographic Coverege: International Year Established: 1975 Number of Employees: 80 O XBRIDGE, INC.
545 Weddel Drive
Summyrale CA 94096
1408; 734-2400
Major Market: Computer and
Communications Equipment
Manufacturing

Mager merchants Equipment Manufacturing Target Industries: Medical Geographic Coverage: National Year Established: 1972 Number of Employees: 85 PANASONIC INDUSTRIAL CO.

PARASONIC INDUSTRIAL CO.
Mistoriats Electronic Corp. of
I. Parasprone Way.
Security II. of OSP64
COST 1889-7000

Plantage of Employees: COO PARABATYEE COOPER.

550 Unerton Road PD. (See 2600 Units To 2000 Units To

PEGASUS DATA SYSTEMS 238 Lichter Drive Moderner, NJ 0646 (201) 355-9200 Maple Marketic Propheral and Computer Manufacturing

Pyter Geographic Coverage: International Year Established 1969 Number of Employees, 3 100 PARALLEL COMPUTERS, INC. 1202 Staffer Road Surits Grur Ca 95000 (409)-429-1338 Major Markettir Computer and Per press Markettir Computer and Per press Termonals Software

Geographic Coverage into Year Established 1976 Number of Employees: 50

Head of Engineering John D Applegate Head of Gustamer Service Bernin Dust

Prophetals Termonis Softween House House Terper Industries Engineering Starker, Bersel Manufacturing Contacts Head of Manufacturing Mark Pre Year Established: 1980 Namber of Employees: 16

Number of Employees: SST - PERKIN-ELMER CORP.
Data Systems Group
Data Systems Group
Composit Nat. 19725
Composit Nat. 19725
Major Mannet Compute
Manus Compu Certo Geographic Coverage: International Year Established: 1957 Number of Employees: 35 Number of Employees: 35

ACCO SYSTEMS
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LINE 1

SECTION OF STORM CONT.

LINE 1

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Contexto:
Head of Marketony B. Rosendaum Head of Selec James K. Sems Head of Selecket Engeleeing David I Cuplan Head of Schwise Engeleeing David I Cuplan Head of Schwise Engeleeing David Contemporate Selections (1994).
Rectiver (International Teachers of Selectional Teachers of Selection (1994).

475 EM ST Mountain View, CA 940K3 (415) 962 0620 Mayer Markets: Computer Perpheral and Orice Equipment Manuscuring, Software House, Mountaincour Computer Supplies Contents: Contents: Computer Supplies Computer Computer POS TECHNOLOGIES, INC.
2000 Becanool. Trop.
2000 Becanool. Trop.
2001 Becanool.
2001 Be

PERTEC COMPUTER CORP.
Data Systems
17112 Arrations Ave
inter. CA 92714
(714) 540-5540
Major Markets: Computer and
Terrinal Manclacturing, Software
House Oselan/Delebutor.

Montenanos/Other Services
Target Industries: OEM
Consciot:
Head of Marketing Roberto Maldono
Head of Sales, Lawrence Cuffolio
Geographic Coverage international
Year Seabbashed, 1997
Number of Employees: 500

Number of Employees: 50
POWTEL OF ABERTHAL A. LTD.
2715 CRIMINA SI
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2715 CRIMIN PHAZE BIFORMATION
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Number of Employees 300

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Composite
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Vase Establishees 1900 Number of Employees, 33

Feeb, 1962.

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Ann Andre 184
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PHOSENIX ORDITAL CORP.
2315 N. 35th Ave
Phoreix AZ 55000
(500, 724-3351)
Major Marketic Computer Terms and Communications Equipment
Merius Communications Equipment
Systems, Mambriance Other
Systems, Mambriance Other
Services

Semonts
Target Industries: Automotive
Target Applications: Data
Acquation Proprise Control
Contects:
Histor of Managing Grant Trasset
Desgrephie Ceverage: Hornatonal
Tear Established: 1975
Number of Employees: 50

Number of Employees 50

HOGENIX MICROSYSTEMS, BIC.

SIC.

SI PLESEY PERIPPERAL SYSTEMS SYSTEMS POWER AND POWER POWE

			remuor
Contacts: Head of Marketing Daniel H. Reese Head of Sales: Gerard Motter Head of Solware: Randy Hardy	Communications Equipment Manufacturing, DEM Perphirats/Terminate, Software House, Marriemento-Other Services	Contacts: Head of Sales Murray MacDonald Head of Software Date Christenson Head of Engineering Historie	(415) 887-7777 Mejor Merkets: Component, Computer, Terminis and Periphers Manufacturing, OEM Periphersis.
Geographic Ceverage: International Number of Employees: 45	Het Sales: More than \$100 Milion (1981)		Terminals and Computer Systems Software House Mantenance Of
PLEXUS COMPUTERS, INC. 2230 Martin Ave	Centects: Head of Marketing, Robert G Clauseen	Geographic Coverage: International Year Established: 1972 Humber of Employees: 210	Terminis and Computer Systems Software House, Maintenance De Sonoce, Systems House (DEM) Target Industries, Maintecturing, Transportation, Lodging, Retail
Santa Ciara, CA 95050 (406) 965 1755 Major Marketix: Computer	Head of Software, Edward J Christianson	PRONTO COMPUTERS, INC. 2170 Kostwa St	Contacts:
	Head of Engineering Roland D. Parger	3170 Koshwe St Torrance CA 90505 (213) 539 6400	Head of Marketing Mike McCorry Head of Sales John Moeller Head of Software Troy Lamons
Systems Terpet Industries: OEM,	Geographic Coverage: International Year Established: 1972	Major Markets: Computer Manufactures: Software House	Head of Engineering Lou Pourisis
Commercial, GA Terget Applications: GA Not Sales: \$5 Million — \$25 Million	Number of Employees: 5,000	Manufacturing Software House Target Industries: Flotal, Systems integrator	Head of Engineering Los Poures Geographic Coverage: Internation Year Established: 1909 Number of Engloyees: 600
(1962) Contacts	PRODICY SYSTEMS, INC. 497 Lincoln Highway	Contacts: Head of Manketing/Sales Gary	GOP COMPUTER SYSTEMS,
	497 Lincoln Highway Iselin, NJ 08630 (201) 283-2000	Bennett Head of Engineering, Skip Heroon	10330 Provincelle Boart
Geographic Coverage: International Year Established: 1900 Humber of Engloyees: 75	Major Markets: Software House, Systems House (OEM), Dealer Detributor: Computer Manufacturing	Head of Engineering Skip Harcon Geographic Operage National Year Established: 1982 Humber of Employees: 25	Brecksville, OH 44141 (216) 526-0838
POINT FOUR DATA CORP. 2569 McCabe Way		PROPHET 21 2 E Broad St	Manufacturing: OEM Computer Systems
	Head of Marketing Eri Golembo Geographic Coverage: Regonal Year Established: 1976	Hopewell, NJ 08525 (609) 466-2100	Target industries: CEM General Business
(714) 754-4114 Major Markets: Computer Marufacturing, Ossier/Detributor;	Humber of Employees: 50 PRODUCT ASSOCIATES, INC.	Major Marketti: Computer Manufacturno, OEM Computer	Target Applications: Accounting. Medical Order Entry, Inventory Contacts:
Target Industries: CEM, Systems	465 Convention Way Redwood City, CA 94063	Systems Terjet Industries: Industrial Distribution, Automobile, Steel, Except of Distribution	Head of Marketing: Ken Parich Head of Software: Gary Keels
Software House Target Industries: OEM, Systems Houses, General Business Target Applications: Project Management, Code Generation Management, Code Generation Management, Code Generation Management, Code Generation	(415) 364-3121 Major Manteta: Computer and	Electrical Distribution	Head of Engineering David Keby Generalities Coverage: Internation
Net Sales: \$5 Million — \$25 Million (1962) Contacts:	Marufectures: OEM Computer	Target Applications: Data Entry Contacts: Hood of Marketing: Ratph	Head of Marketing Kee Pench Head of Schware Gary Kaele Head of Engressing David Kely Geographic Covenage, internation Toar Established: 1979 Number of Employees: 19
	Systems Target Industries: Education: Government; Medical, Scientific	Head of Software Net Jate	QEI, INC.
Geographic Coverage International Year Established: 1969 Humber of Employees: 200	Office	Beauregard Head of Sothware Net Jate Head of Engineering: Tom Castanya Geographic Governage Informational Year Established: 1909 Number of Employees: 45	Springfeld, NJ 07081 (201) 379-7400
POLARIS MICROCOMPUTERS,	Net Sales: \$1 Milion — \$5 Milion (1962)		Computer Manufacturing, OEM
	Head of Marketing Joseph DePalo Head of Engineering Robert MrGreen	PSITECH 2842C Walnut Ave Tustin, CA \$2680	Dealer Detroutor, Software House Maintenance Other Services
Major Marketa: OEM Computer	Heed of Customer Service: Lauranne	(714) 730-0561 Major Merkets: Computer and	Ol and Ges. Ween Control
Van Nuys, CA. 91406 (215) 989-5111 Major Merkelts: OEM Computer Systems. Computer Manufacturing Terget technistiss: Retail, Pharmacoutcal Commette.	Geographic Coverage: International Year Established: 1976 Number of Employees: 10	Major Methote: Computer and Terminal Manufacturing. Maintenance: Other Services Target Industries: Sarving, Office. Of	GET, MC. 10 Faborn Hood SpreySele, Yu. CO'001 Compace SpreySele, Co'001 Dealer DealerAuth, Software House Target Residence: Ectoric Power Ol and Ges. Waser Control Target Residence: Ectoric Power Old and Ges. Waser Control Target Residence: Ectoric Power Ord Colon
Heed of Sales Dave Tanzman		Torget Applications: Graphics Not Select S1 Million \$5 Million	Contacts:
Heed of Sales Dave Tanzman * Geographic Coverage: National Year Established: 1976 Number of Employees: 30	PROLINK CORP. 5757 Central Ave. Boulder, CO 80301	(1901) Contents:	Geographic Coverage: Internation Year Established: 1974 Muniter of Employees: 150
POLYMORPHIC SYSTEMS	(303) A47-2800 Major Markets: Computer Manufacturing, OEM Computer	Head of Marketing Sales Herbert III Berkwis	91 CORP.
POLYMORPHIC SYSTEMS 5730 Tromercod Drue Sarca Barbara, CA 90117 805) 957-0456 Major Marbar, Computer	Systems	Head of Engineering: Paul Gossetin Head of Customer Service: Steve	
Major Market Computer	Heed of Marketing, Bardwell Salmon	Outeon Geographic Coverage: National	Hauppage NY 11787 (518) 543-7800
Sorra Serbera, CA 93117 900, 997-0466 Major Markett Computer Manufacturing Terget Industries: Small Business Ferget Applications: Accounting Net Balles: SS Million — \$25 Million 1961)	Heed of Marketing, Bardwell Salmon Heed of Sales William T. Treadwell Heed of Software Suresh C. Baza; Heed of Engineering, Machiel M.	Deographic Coverage: National Year Established: 1979 Namber of Employees: 20	Major Merket: Computer Manufacturing
Ver Bales: \$5 Million — \$25 Million	Head of Engineering, Michael M Malmer	PYRAMID TECHNOLOGY	Contacts: Head of Marketing, Richard Van
Dentects:	Geographic Coverage: International Year Established: 1960 Number of Employees: 52	1295 Charleston Road	Brunt Geographic Coverage: Internations
Dentects: Feed of Marketing Bates. Ken Guda. Heed of Software: Lenny Arabi Heed of Engineering Mark Mackin Heed of Customer Service.	PRO-LOG CORP.	1205 Charleston Road Mountain View, CA 94043 (415) 494-2700 Major Market Computer Manufacturing	Geographic Coverage: International Year Established: 1971 Number of Employees: 20
Head of Customer Service: learnede Lawson	2411 Garden Road Monterey, CA 93840	Manufacturing Contacts:	GUASAR CO.
Head of Customer Service: learnede Lawson Sengraphic Corvenage: International Feer Satebbehard: 1975 fember at Employaea; 65	Monterey, CA. 93940 (400) 372-4593 Major Markets: Component and Computer Manufacturing, Software	Head of Marketing Frank Madren Head of Software Bill Gargie Head of Software Bill Gargie Head of Software Bill Gargie Geographic Georges National Year Established: 1981 Namber of Engilepase: 50	GUASAR CO. 9401 W. Crand Are Frankin Park, E. 60131 Major Mankets: Deser Distributor; Computer Manketsing Tempet Indicesters: Systems House, CGM, Computer Store
	Tanget Industries: OEM: Engineering	Year Established: 1981	Target Industries: Systems House, OEM, Computer Store
forms Park desick, MA 01780 617) 655-8000 dajor Markets: Component,	Target Applications: Industrial Control		
Sajor Markets: Component,	Het Bates: \$5 Million — \$25 Million	GANTEL CORP. 4142 Port Eden Way	Head of Marketing Todd Urreda Geographic Coverage: International Tear Established 1975

CONTROL OF THE PROPERTY OF THE		
A CARLO CONTROL CONTRO	_	Major Market Computer Manufachumg Geographic Coverage: Internations Tree Establishmet 1977 Majohar of Englaryees 21 Majohar of Englaryees 21 Sama Care. CA 90001 Major M
display size and concease and c		RADIAN CORP. P.O. But 9948 Austin TX. 78765 (\$19,464-4797) Major Merkeus Component and Component Manufacturing, OEM Component Systems, Software House, Dealer/Daviscore, Manufacturing, OEM Component Systems, Software House, Dealer/Daviscore, Manufacturing, OEM Component Systems, Software House, Dealer/Daviscore, Manufacturing, Software Tanget Manufacturing, Engine
Common Drives Deriva Clare CA 9500 district Size Size CA		(801) 467-4141 Major Macharite Computer Manufacturing, Schware House, Systems House (OSM) Target Industries: Barlung Mat Sales: \$1 Million — \$5 Million (1981) Contacts: Head of Marketing, James E. Bagle Geographic Coverings: National Year Essalehabet (1982)
Sinte Clark, CA. 19050 (Adit) 884-231. Computer and Terminal Manufacturing. Terminal Manufacturing. Aerospool. Scientific, Business Contects: Head of Martining, Peter W. Cased Geographic Coverage, Internetion Test Establishing Contents Manufacturing Peter W. Cased Geographic Coverage, Internetion Test Establishing.		Coop. 4151 Burton Drive Sarta Care. CA 95050 (4005 984-179 Major Market Computer Manufacture) Her Baise: \$5 Million — \$25 Million (1981) Geographic Coverage: Internation Year Established: \$75 Munifor of Employees: 64
P.O. Box 23334		Sinta Cura, CA 19509 (1405) 984-257. (1405) 984-257. (1405) 984-257. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 984-985. (1405) 98
		P.O. Soc 23334

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SC IIIII SIA SIA SIA SIA SIA SIA SIA SIA S	ice CA 9 () 390-8673 or Morkets officturing, get Industri ourvaries, T get Applice or and Briny, Saless, \$1 in (2) tects: d of Softward of Engine	DATA SYST Computer Software Ho, etc. Logal, Me rash Colectio Series WP, Le , Temporary Million — \$5 th re: William Sc ering Jack M inversage: Natio pd: 1977 playees: \$0
BC SHRIT 777 Mon (411) Man (417) Man	ENTIFIC (E Middlefe ream View 0 964-5700 or Markets pheral Mark purer Syste	ind Road CA 94043 Computer of Aschurry, Oil Free Systems House est OEA Soil Soil Industrial James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James James Jam
90 90 90 90 90 90 90 90 90 90 90 90 90 9	SYSTEM O Technolog Box 1000 techle, AL o 812-4600 or Markets: puter and ufacturing, term, System	E, INC. gy Drive 35807 Component, Ferminal OEM Computers House (O
SE 124 WE (200 Mag Syn Mag Con Tar From Tar Inch Con Tar	or Marketo: terno: Softw demarce Or sputter Manu- pet Industri typ: Industri pet Applica trial	PANY, 1960. N.W. 2 20011 OEM Compu- ner Services. Set Set Services. Set Set Set Set Set Set Set Set Set Set
SE PRO ITE	TTLE OD DOUCTS I Industry C rie. WA 8 575-1830 or Market I utachung	MAPUTER love 8186 Computer

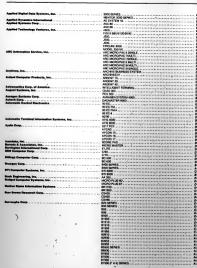
Geographic Coverage: International	Systems: Systems House (OEM)	Head of Software Mark Summer	Manufacturing, OEM
Year Established: 1977 Number of Employees: 36	Target Industries: Manufacturing.	Geographic Coverage: International Year Established: 1973	Peopherais Terrenals, Softw
HUMBOR OF EMPLOYMENT 30	Warehouse Process Control Terget Applications: Factory	Humber of Employees: 7	House Target Applications: Transa
SECOND SOURCE			
COMPUTERS, INC.	Data Acquestion, Process Monitoring	SOUTHWEST TECHNICAL	
14712 Bendey Circle Tustn. CA 92500	Net Sales: \$1 Million — \$5 Million (1982)	PRODUCTS, INC. 219 W. Rhapsody	Head of Marketing Sales Joh Morandon
			Head of Software: Bob
Major Market: Computer Manufacturing	Head of Marketing Sales Jeffrey		Freburghouse Head of Engineering Gardner
Manufacturing Target Industries: Scientific	Hearing Head of Software/Engineering	Major Market Computer	Head of Engineering Gardner
Contacts:		Manufacturing Target Industries: Design	Head of Customer Service: A
	Geographic Coverage: National Year Established: 1975		
Geographic Coverage: International Year Established: 1975	Year Established: 1975 Humber of Eropleyses: 25	Head of Marketing: Fred Fuchs	Geographic Coverage: Interv Year Established: 1960 Number of Employees: 110
Number of Employees: 40		Geographic Coverage: International Year Established: 1965	Mumber of Employees 110
	SIERRA NATIONAL CORP.	Mumber of Employees: 100	
SEEQUA COMPUTER CORP. 223 West St	5037 Ruther St		SUN MICROSYSTEMS, II
	San Diego, CA 92111 (714) 277-4810	SPECTRA SYSTEMS, INC.	2310 Watsh Ave
(301) 268-6650		3641 Old Conejo Road	Santa Clara CA 99051 (406) 748-9900
Major Market: Computer Manufacturing	Manufacturing, Software House, Systems House (DEM), Data		
Contactor	Services	(805) 469-4324	Manufacturing, OEM Compute
	Target Industries: Accounting	Major Markets: Computer and Terminal Manufacturing, DEM .	Systems Terpet Industries: OEM, Sco
Year Established: 1979		Computer Systems, Systems House	Engineering Terget Applications: CAD, G
SENTIMEL COMPUTER CORP.	- Target Applications: Energy Control, POS: Accounting Net Sales: \$1 Million — \$5 Million	(OEM)	Terget Applications: CAD. O
	Net Sales: \$1 Miles - \$5 Miles	Het Sales: \$500,000 \$1 Million (1981)	Contacts:
Circinati, OH 45242 (513) 964-6622			Head of Marketing Ajay Pun Head of Software William Joy
(513) 984-6622	Contacts: Head of Marketing Sales David	Head of Marketing Sales. Al Coulter Geographic Coverage: International Year Established: 1978	
Major Markets: Computer and Terronal Manufacturing Software	Freten	Geographic Coverage: International	Bechaolsheim
Terrenal Manufacturing: Software House: Systems House (OEM) Tenget Industries: Distribution:	Head of Software Dennis Wilson	Number of Employees: 55	Head of Customer Service: Jo Gage
Target Industries: Distribution:	Head of Engineering James Limb		Geographic Coverage: Interv
Wholesale Terrar Applications Associates	Geographic Coverage: International Year Established: 1969	SPERRY CORP.	Geographic Operage: Interv Year Established: 1982 Number of Employees: 40
Terget Applications: Accounting Het Seles: \$1 Million — \$5 Million	Humber of Employees: 40	Sperry Univer Division Township Line & Union Meeting	
(1981)		Township Line & Union Meeting	SUPERSET, INC.
Contacts:	SMOKE SIGNAL SROADCASTING	Road RO Rev 500	SAPPERSET, INC. 11035 Rosele St San Diego, CA 92121 (714) 452-8665
Head of Marketing Leland Cole Head of Sales John W. Peters Head of Engineering Version J.		P.O. Box 500 Bus Bel, PA 19424 (215) 542-4011	San Diego, GA 92121
Head of Engineering Vernon J	Westake Village, CA 81382 (213) 569-6040	(215) 542-4011	Major Market: Computer Manufacturing
Schryver	(213) 869-9340 Major Markets: Computer	Committee Control Control	Manufacturing
Geographic Coverage: International Year Established: 1978		Commissions Egypniers Mendacturing OEM Computer Systems, Software House, Maintenance Other Services Target Industries: Manufacturing, Public Sector, Deshbuston, Arrine	Contacts: Head of Marketing Sales. Jen
Number of Employees: 45		Manufacturing OEM Computer	
SENTINES. ENERGY CONTROL	Net Sales: \$1 Million — \$5 Million (1981)	Systems, Software House	Head of Engrisering James I
SYSTEMS, INC.	Contents:	Terror Industries Manufacture	Geographic Coverage: Interv Year Established: 1979 Marrier of Employees: 10
	Head of Marketing/Sales Jim Alklay	Public Sector, Distribution, Airline	Married of Employees: 10
Burington MA 01803	Head of Engineering Ken Enckson	Net Bales: \$100,000 — \$500,000 (1561)	
Burkegton MA 01803 (\$17) 273-1778 Major Markets: OEM Computer Systems, Software House.	Geographic Corvenage International Trac Established: 1976 Namber of Employaes: 20		SYNAPSE
Systems, Software House.	Number of Employees: 20	Head of Marketing: Joseph Casulto	COMPUTER CORE
Computer Manufacturing		Geographic Coverage: International	801 Buckeye Court Mepitas CA 95035
Systems, Software House; Computer Manufacturing; Terget Industries; Manufacturing; Motel, Auszery Home Terget Applications: Energy Manugement Geographic Governage; National — Year Established; 1576 Hemiter of Employees; 12	PRODUCTS CO.	Geographic Coverage: International Year Established: 1982 Number of Employees: 48,000	
Terget Applications: Energy			
Management	1 Sony Drive Park Ridge, NJ 07656	STEARH COMPUTER	Manufecturing, Software House Maintenance Other Services Terget Industries: Banking, L.
Year Established: 1976	(201) 930-1000	SYSTEMS	Maintenance Other Services
Number of Employees: 12	Major Markety Commeter Terrenal	3501 Raiegh Ave S Mryseapolis, MN 5541E	target statement country.
	Major Markete: Computer Terrenal and Perpheral Manufacturing		Target Applications: Transact Processing
SHARP ELECTRONICS CORP.	Geographic Coverage National Year Established: 1961	Major Markete: Computer Manufacturing: Maintenance/Other	Processing
Systems Division 10-Sterp Plaza'			Manufol Sains Grantus Insent
	SOUTHERN COMPUTER	Terget Industries: Fortune 1000, Small Suovess	Head of Sales Stanton Joseph Head of Software Engineering
(201) 265-5600 Major Markets: Deeler/Distributor: Computer Manufacturing	SYSTEMS, INC. 2304 12th Ave N		
Corrector Manufactures	P.O. Box 3373A	Manual of Manual Property States (Sept.	Head of Oustower Service: Jo Denny
Contacts	Birmingham, AL 35234 (205) 933-1859	Head of Marketing/Sales Bob Gallagner Head of Engineering John Chinas Head of Gustomer Service Ketty	
Head of Marketing Sheland Holly Seographic Coverage: Informational Year Established: 1980		Head of Engineering: John Chinas	Humber of Employees: 80
Year February 1980	Major Markets: Software House.	Fred of Customer Service Kethy	SYSCOM MYTERMATIONA
Number of Ereptoyees: 500	OFM Computer Systems, Data Services, Dealer/Dubribudo: Computer Manufacturing	Geographic Coverage: International	
SHETHORP SYSTEMS, INC.	Computer Manufacturing:	Geographic Coverage: International Year Established: 1982 Number of Employees: 50	2712 Middleburg Crive Columbia SC 29204 (803) 256-6253 Major Member Computer
NO CON AND	Maintenance/Other Services Target Applications: Data Entry Not Sales: \$500,000 — \$1 Million	Plumber of Employees: 50	COLUMBIA SC 29204
800 Cox Ave Estanoer, KY 41018	Net Sales \$500,000 - \$1 Miles	STRATUS COMMITTEE INC	Males Market Const. dec

INC.	Pengheral and Communications	Chemical Pharmaceytox Industrial	(305) 971-2250
1108 South High St.	Equipment Manufacturing	Terpet Applications: Process Control information Management	Major Markets: Computer, Terren
South Bend, IN 46618	Contacts:	Control, information Management	
(219) 287-5916	Head of Marketing David Macket		
Major Market Computer	Head of Sales: Jerry Peterson	Contacts:	Perpherals/Terrinals and Corrouts
Wanufacturing	Head of Engineering Larry Launch	Head of Marketing: Jerry Grader	Systems, Software House
Target Industries: Sizel, Magnet	Head of Customer Service Jerry	Head of Sales: Edward Grebel	Target Industries: Newspaper
Wire	Everett	Geographic Coverage: International Year Established: 1969	Teleconynunications
Target Applications: Oxygen	Geographic Coverage: International Year Established: 1974	Year Established: 1969	Contacts:
Analysis Net Sales: \$1 Million — \$5 Million	Year Established: 1574	Number of Employees: 3,000	Head of Marketing/Sales Ian Moss
(1981)	Number of Employees, 4,000	****	Head of Software George Grucer Head of Engineering Rod Namer Geographic Coverage: Internation Year Established: 1999 Ramber of Employees: 100
Contacts	TAMBY CORP.	TRM, INC. (TYPE-A-LINE	Head of Engineering Rod Namen
Heat of Sales: Puter Van Dan	Radio Stack Devision	BUSINESS MACHINES	Geographic Coverage: Internation
	Hadio Shack Division	168 E. Second S	Year Established: 1909
Head of Engreening: Townsend Thomas	1800 One Tandy Center Fort Worth, TX 78102	Salt Lake City, UT 84111	Number of Employees: 100
Head of Customer Service, Ted		(901) 521-5310	
meso of Castomer Service, 149	(817) 390-3011	Major Markets: Computer	TELECTRONIC, INC.
Dylawsia Geographic Coverage: International Year Established: 1970 Humber of Employees: 30	Major Markets: Computer Terminal.	Manufacturing, CEM Computer	Sute B
Geographic Coverage: Imirrational	Pergheral and Communications Equipment Manufacturing, OEM .	Systems, Software House,	2759 S Third W
Tear Established: 1970	Equipment Manufacturing (JEM .	Dealer Distributor, Miscolaneous -	Salt Lake City, UT 84115 (801) 486-9066
mumber of Employees: 30	Computer Systems, Software House, Dealer Ostributor	Computer Supplies	(801) 486-0266
SYSTEMS GROUP	Mantenance/Other Services	Terget Industries: Auto Parts 3	Major Markets: Component.
STSTEMS UNOUP	Target Industries Legal Medical	Manufacturing, Legal, Medical	Computer and Communications
1601 Orangewood Ave Orange, CA 92668	Regi Estate, General Ruscess	Terget Applications: Accounting Het Seles: \$1 Million — \$5 Million	Equipment Manufacturing, OEM Computer Systems, Software
(714) 633-4460	Het Sales: More than \$100 Million	PHY Seles: \$1 Million — \$5 Million	Computer Systems, Software
Major Markets: Computer	(1982)	(1981) Contacts	House, Dystems House (OEM):
Manufacturing, OEM Computer	Contacts:	Contacts	Desier/Destributor,
Marchaelbrig, Cesi Computer	Head of Marketing Ron Stagel	Head of Sales Greg O Bowen	Mantenance/Other Services
Systems, Software House, Maintenance Other Services	mead of Marketing Hon Stages	Geographic Coverage: Regional Year Established: 1962	Target Industries: Hospitality:
Net Sales: \$5 Million — \$25 Million	Geographic Coverage: International Year Established: 1921	Number of Employees: 20	Telephone
(1992)	Number of Employees: 20,000	Number of Employees: 20	Het Selex: \$1 Million \$5 Million (1982)
Contacts:	Mulmoer or Employees: 20,000	TECHNICO, INC.	
Head of Marketing Dave Jenoss	TANO CORP.	2901 Drud Park Drive	Contacts.
Head of Engineering Lowel Dunn	4301 Poste Court W	Columbia, MD 21215	Head of Marketing David J. Gray Head of Software, Bill Larker
Generative Coversor International	New Orleans, LA 70129	(301) 569-1400	Head of Engineering: Susan
Geographic Coverage: International Year Established: 1978	(504) 254-3500	Meier Merkets: Computer	Head of Engreening: Susan
Number of Employees: 50	Males Madada Communications	wells western controls	Sanckerg Geographic Coverage: National Year Established: 1979
	Major Markets: Component and Computer Manufacturing, OEM	Tennet Industries Education Small	Year Establishment (677)
TAR PRODUCTS CO.	Computer Systems, Systems House	Manufacturing Software House Terget Industries: Education: Small Business, Industrial	Tem Campabase: 1979
Electronic Office Product Division	(DEM)	Toront Applications Transport Office	TELEPILE COMPUTER
	Terpet Industries: Marine, Oi, Ges.	Target Applications: Training Office Net Sales: \$1 Million — \$5 Million	TELEPILE COMPUTER
	Energy	(1981)	PRODUCTS, INC. 17131 Darrier SI
(415) 858-2500 Major Markets: Terminal. Computer.		Generalia Commune National	Intra. CA 92714
Major Markets: Terroral Corrector	Management, Pipelme Control Net Sales: \$5 Million — \$25 Million	Geographic Coverage: National Year Established: 1976 Number of Employees: 10	(714) 557-6660
	Net Select \$5 Millon \$25 Millon	Number of Employees 10	Major Manhata Communica
	(1961)		Manufactures Company
		TECHAR, INC.	Major Markets: Computer Manufacturing Contacts:
Computer Supplies Terget Applications: Data Errry Net Sales: SS Million — \$25 Million	Head of Marketing, then Albert	23600 Mercantile Road Cleveland, OH 44122	Manufact Manual Property and Manual
Ternet Anelications: Data Front		Claustered Chi 44199	Manuf of Sales C. Co. Coherante
Net Sales: \$5 Millon - \$25 Millon	Heart of Software, A.J. Finner		Heat of Economics C. Bate
(1901)	Head of Software A.J. Finnin Head of Engineering Water J.	Major Markets: Computer and	Head of Marketing: Jim Nahry Head of Salesi C. De Gabriello Head of Engineering D. Bello Geographic Coverage: International Year Established: 1960
		Percheral Manufacturing	Year Seasthatest 1960
		Target Industries: Personal	Humber of Employees: 70
Head of Marketing Robert Stroh Head of Sales, H.E. LeClaire	Geographic Coverage International Year Established: 1958 Number of Employees: 450		manager on companyment. 70
Geographic Coverage: National Year Established: 1949	Humber of Employees: 450	Terget Applications: Industrial	TELEGENIX, INC.
Year Established: 1949			26 Charles Ave
Mumber of Employees: 1,000	TARRELL ELECTRONICS		26 Otney Ave P.O. Box 5550
	State B		Cherry MR. N.I. 09000
TAK AUTOMATION, INC.	950 Dovien Place		Cherry Hill, NJ 08003
868 Cowan Road	Carson, CA 90746	Generalitic Coverage International	Major Marketer Corns day and
Buringame, CA 94018 (415) 347-9851	Carson, CA 90746 (213) 538-4251	Year Established 1975	Major Markete: Computer and Terrenal Manufacturing
(415) 347-9851	Major Markets: Component and Computer Manufacturing, OEM Computer Systems, Software	Geographic Coverage: International Year Established: 1975 Number of Employees: 70	
Major Markets: Computer	Computer Manufacturing, CEM		
Manufacturing, OEM Computer	Computer Systems, Software	TEKTRONIE, INC.	Codszuwed
		P.O. Box 500	Generalitic Coverage International
Target Industries: Metal, Shipyards		Betwerton OR 97077	Geographic Coverage: International Tear Established: 1958
Target Applications: Process	(1981)	(503) 627-7111	Number of Employees: 70
Controt: Materials Handling	Contacts	Melor Markets: Component.	
Net Selee: \$1 Million \$5 Million	Head of Marketing: Donald E Tartiel	Computer, Terminal, Peripheral and	TELERAM COMMUNICATIONS
Target Industriae: Metal, Shipyards Target Applications: Process Control: Metanais Handling Net Selve: \$1 Million — \$5 Million (1961)	Geographic Coverage: National Year Established: 1975		
	Year Established: 1976	Manufacturing, Software House,	2 Corporation Park Drive White Plans, NY 10604 (914) 694-9270
Head of Marketing Sales Karl R.	Mamber of Employees: 10	Maintenance/Other Services	White Plains, NY 10604
Worle		Terget Industries: Engineering.	(914) 694-9270
Heed of Software: Rita Levinson	TAYLOR INSTRUMENT CO.	Communications Exappment Manufacturing, Software House, Maintenance-Other Services Tenget Industries: Engineering, Manufacturing, Television, Tenget Applications, Test and Measurement, Graphics Net Selde: Over \$100 Million (1981)	Mejer Markets: Computer and Terminal Manufacturing
Head of Engineering Anthony Milosz	95 Main St	Terpet Applications, Test and	Terrinal Manufacturing
Geographic Coverage: International	P.O. Box 110	Measurement, Graphics	
Head of Engineering Anthony Milosz Geographic Coverage: International Year Established: 1975 Humber of Employaes: 70	Plochester, NY 14604	Het Saids: Over \$100 Million (1961)	
Humber of Employees: 70	(718) 235-5000	Geographic Coverage: International	Target Applications: Text Editing

The Assertion of Tenders of Tende				vendor
Service of Express (1) The Control of Express (1) The Co				
The Control of Control	Geographic Common National	Mantenance Other Services	Contacts:	(813) 753-6411
The Control of Control	Year Established: 1973			Corrector and Communications
See The Section of Control of Con	Number of Employees: 70	Head of Marketing Sales Brad	Geographic Coverage: International	Equipment Manufacturing, Softwar
See The Section of Control of Con	TELEVIDEO SYSTEMS, INC.	Geographic Courses international	Number of Employees 12	House Mantenance-Other Service
See The Section of Control of Con		Year Established: 1981		Target Applications:
Serve desired control of the control	Surveyulle, CA 94088	Number of Employees: 50	TRIFORMATION SYSTEMS,	Telecommunications
See	Mesor Markets: Consouter and	THREE RIVERS COMPUTER	3132 S.F. Jan St	Head of Marketon William
The property of the property o	Terrenal Manufacturing, Software	CORP.	Short, Fl. 33494	Hutchinson
March of Follows 19. The Company of	Terror Industries Small Business	720 Groen St.	(305) 283-4817	Geographic Coverage: National
March of Follows 19. The Company of	Contests	(412) 621 6250	Perpherain/Terrenais, Computer	Number of Produces 200
The Control of Price of the Control	Head of Marketing R Dubhidge.	Major Market: Computer	Manufacturing "	
The Control of Price of the Control	Head of Sees S Tatum	Manufacturing	Net Sales: \$500,000 - \$1 Million	VECTOR GRAPHIC, INC.
THE AND A SECTION OF THE ADDRESS OF	Generative Covergoe: International	Target Applications: Personal	Geographic Coverage International	Trousant Own CA 91320
The Part of Management of Mana	Year Established: 1977		Year Established: 1999	(805) 499-5831
The Part of Management of Mana		Met Bales: \$1 Million — \$5 Million	Number of Employees: 56	Major Markete: Computer and
The anti-ordinate of the control of	TESDATA, INC.			Manufactions Equipment
man fraction (CH Company) man fraction (CH Comp	7921 Jones Branch Drive		9841 Arport Divid	Not Sales: \$25 Million - \$100
Marke Marked (Child Corpus) And Articles (Child Corpus) Articles (Child Corpus) And Articles (Child Corpus) Article	McLean, VA 22102	Williams	Los Angeles, GA 90045	Million (1982)
The state of the s		learner Managed Cingmontage	Males Markets Committee Toronton	Contacts
The state of the s	Systems, Computer Manufacturing		Peroheral and Communications	Geographic Coverges Internation
The state of the s	Target Industries: Large	Sowness	Equipment Manufacturing, Software	Your Established: 1976
The state of the s	Target Applications: Curiomana	Year Established 1974	House, Dealer, Onlinoutor;	Number of Employees: 350
The state of the s		Number of Employees: 160	Target Industries: Ranson, Reset	VICON SYSTEMS, INC.
The state of the s	Het Seles: \$5 Million — \$25 Million		Geographic Doverage: National	2307 Sering Drive
The control of the co	(1981)	TIMEX COMPUTER CORP.	Year Established: 1980	San Jose, CA 95131
The control of the co	Head of Marketing David Planning	Modebury, CT 06725	UNICO, INC.	Many Markety Component
The control of the co	Head of Engineering: John De Wit	(203) 573-5000	3725 Nicholson Road	Computer, Terranal and Perpheral
The property of the control of the c	Borrances	Magde Markets: Computer	Franksville, W1 53126	Manufacturing, Maintenance/Other
The property of the control of the c	Geographic Coverage: International	Target Industries: Education	Major Martiate: Commonwell and	Target Industries: Oil Medical
The property of the control of the c	Year Established: 1972	Target Applications: Educator:	Computer Manufacturing, CEM	Contacts:
The property of the control of the c	Number of Employees: 200	Home, Business, Entertainment	Computer Systems	Head of Marketing Don McCook
For the street of the street o	TEXAS INSTRUMENTS, INC.	Head of Sales' Don LaDing		
Comment of the commen	Data Systems Group	Geographic Coverage: International	Target Applications: Press Feeders,	Heed of Software William Zech
Comment of the commen	P O Box 202146	Year Established: 1982 -	Flying Cutoff: Rotor Motion	Head of Engineering: Don Sanshire
Communication Co	Major Marketer Component	TORCH COMMITTERS LTD	riges	Head of Customer Service. Robert
Comment of the control of the contro	Computer, Terrenal, Peopheral and	Suite 1504		Generalitic Coverage: Internation
Comment of the control of the contro	Communications Equipment	61 Commerce Way	Head of Marketing/Sales. Al Engle	Year Established: 1982
Comment of the control of the contro	Het Seles More than \$100 Million		Head of Software, Hobert	Humber of Employees: 70
And of financing Christal State of Engineering Christal State of E		Major Merket: Computer	Head of Engineering William	VICTOR TECHNOLOGIES, INC
Sequentify the property of the	Contacts:	Manufacturing	Harringt	Data Products Division
Sequentify the property of the	Clouds or warrance or creates at	Heart of Sales Frest Marters	Distance	Charges & 60616
Sequentify the property of the	Head of Engineering George H	Head of Software Revenued	Geographic Coverage: International	(312) 539-8200
Name of Grayman B. Did Profession Street (September 19) and Professi	Hermeier	Arderson	Year Established: 1958	Major Marketa: Peripheral and
Name of Grayman B. Did Profession Street (September 19) and Professi	Year Established 1930	Year Established 1981	number at Employees: 175	Computer Marking Office
The properties of the control of the	Number of Employees: 90,000	Number of Employees 80	UNICOMP CORP.	Contacts:
Monthering Maley. Toget Indeption (Age Cred.) Toget Indept			202 Plaza Towers	Head of Sales. Flor Wilson
Monthering Maley. Toget Indeption (Age Cred.) Toget Indept			M17) 883-6800	Geographic Coverage: Memators
Monthering Maley. Toget Indeption (Age Cred.) Toget Indept	Proent, AZ 85019		Major Markets: OEM Computer	Mumber of Employees: 1,300
Monthering Maley. Toget Indeption (Age Cred.) Toget Indept	(802) 289-6841	Tuern, CA 92680	Systems, Software House, Systems	
Monthering Maley. Toget Indeption (Age Cred.) Toget Indept	(CEM: CEM COMOUTE Systems		Mantenana Piter Secret	SYSTEMS INC
Toget Applications Co. C. Calculation in Mark of Melectric Quarter (Stronger Lagrant Melectric Company). See of Stronger Feb. Mark of Stronger Company North Controlled C	Computer and Perpheral	Equipment and Computer	Computer Merufacturing	Suite 300
Consiste: Veo Established: 1691 Number of Employees (0) Number of Software Clay F York Number of Software Clay F York	Manufacturing	Manufacturing	Target Industries: Lagel, Small	2055 Gateway Place
Consiste: Veo Established: 1691 Number of Employees (0) Number of Software Clay F York Number of Software Clay F York		Contacts:	Accounting	4450 295-4600
Consiste: Veo Established: 1691 Number of Employees (0) Number of Software Clay F York Number of Software Clay F York	Target Applications: OA, Education	- Head of Marketing James Getzinger	Target Applications: Litigation	Major Market: Computer
Geographic Coverage: Regional . Head of Software Clary F York Geographic Coverage: Internal	Net Sales: \$1 Milion — \$5 Milion	Head of Sales Phil Vertin	Support WP, Unix	Manufacturing
Geographic Coverage: Regional . Head of Software Clary F York Geographic Coverage: Internal	Contacts:	Year Felablished: 1991	(1961)	Contacts: Contactor Con
Geographic Coverage: Head of Software Clary F York Geographic Coverage: Interns	Head of Marketing Roy Evens	Number of Employees: 80	Contacts	Head of Engineering Jim Willott
Through Termonia (1972) 3.77 OCOMPYTERM, 600. 11 (27) Under Informacy (1973) 15 (27) Under Informacy (1973) 16 (27) Under Informacy (1973) 17) Under Info	Geographic Coverage: Regional		Heed of Software Gary F York	Geographic Coverage: Internations
3 R COMPATTERS, INC. Li Lymn 20	Teer Estatemen: 1978	1750 New Mediums	Year Columnia 1977	Year Established: 1981
18 Lymn St. Weekbox, MA. 01561 (516) 450-9740 (but seekbox, MA. 01561 (but see	3 R COMPUTERS, INC.	Farrengdele NY 11735	1977	
Transform Mr. U1981 Major Market Computer BBY 2006 Willied Industrial Way 1 Industrial Are Lowel Mr. 01851 (617) 459-5000	15 Lyman St	(516) 420-9740		WANG LABORATORIES, INC.
Steper Markets: Computer Target Industries: Senting, Medical. P.O. Box 5306 (617) 459-5000		Man (scarce)	2004 William Inches wheel Way	I moustle Are
	Melor Markets: Computer	Target Industries: Barking, Medical	P.O. Sox 5336	(617) 459-5000
	Manufacturing: Software House,	Government	Sarasota, FL 33580	Major Markete: Computer, Terranal

Perpheral Communications	Geographic Coverage: International	Contacts:	Manufactures
Equipment and Office Equipment		Head of Marketing Hai Horrocks.	Target Industries: Small Business
Manufacturing Target Industries: Spring	Number of Employees: 450		
Pregrance, Legal State Local	WINTER CORP.	Year Established: 1973 "	Head of Marketing. Thomas
Givernment	1801 South St	Number of Employees: 75	Imperato
Terpet Applications: Data Fritz	Lirlayette IN 47904	ZEDA COMPUTERS	Geographic Coverage: National Year Established: 1962
Electronic Mat, Human Resource		INTERNATIONAL LTD.	Number of Employees, 21
Management, Programmer Utilities Het Sales: \$25 Million — \$100	Major Markets: Software House	1662 W 820 N	manual or Endocheer 53
Met Sales: \$25 Million — \$100 Million (1981)	Computer Manufacturing.	Provo, UT 84601 (801) 377,9948	ZILOG. INC.
Contacts:	Mantenance Other Services Terpet Industries: OEM	(801) 377-9948	1315 Del Ave
Head of Marketing/Sales: John F	Terret feminations led ates	Major Market: Computer Manufactures, Software Nouse.	Compbel, CA 95008
	Terget Applications: Industrial Control General Business	OEM Computer Systems	
Head of Software/Engineering	Contacts:		Major Markets: Component and
Frederick A Wang	Head of Software: Stephen E. Beiter	Terpet Applications: Accounting, Electronic Mail	Computer Manufacturing
Geographic Coverage: International y Year Established: 1951	Head of Engryening James B	Electronic Mail	Dealer/Distributor.
Number of Employees: 19.200	Wilson Geographic Coverage: National	Net Sales: \$1 Million — \$5 Million	Maintenance/Other Services Net Sales: \$25 Milion \$100
The same of Employees. 19,200	Year Established: 1973	(1961)	Milion (1961)
WAVE MATE, INC.	Number of Errefovees, 12	Geographic Coverage: National Year Established: 1976	
14009 S Crenshaw Blvd		Number of Employees: 10	
Hawthorne CA 90250 (213) 978-Moon	XEROX CORP.		
Major Market, Computer	800 Lohgrage Road P.O. Box 1600	ZEHDEX CORP.	Vonderschriet
Manufacture Corrector	Stanford, CT 09904 -	6644 Serra Lane	Geographic Coverage: Internation Year Established: 1974
Manufacturing Terpet Industries: OEM	2021 329-6700	Dubin, CA 94568 (415) 829-3000	Humber of Employees: 1,000
	Major Markets: Computer, Terroral	Major Markets: Component and	manifest or Emphasters. 1,000
	Perpheral and Office Fourteent	Computer Manufacturing	ZOREX
Contacts:	Manufacturing Software House		Suite J
Head of Marketing Jeffrey Post Head of Engineering Dennis Painter	Systems House (OEM)		7343 Ronson Road
Read or Engineering Dervis Partier	Maintenance/Other Services. Miscelaneous Computer Supplies	Head of Marketing Sales Rob	San Dego, CA 92111 (714) 971-6971
Geographic Coverage: International Year Established: 1977	Terpet Industries: Government,	Richardson Head of Engineering: John Hight	Many Markets Corne des and
Number of Employees: 6		Generative Communicative Internative of	Major Markets: Computer and Perpheral Manufacturing
	Net Sales: Over \$100 Milion (1981)	Geographic Coverage: International Year Established: 1979	Geographic Coverage: National Year Established: 1979
WESTERN DIGITAL CORP.	Contacts:	Number of Employees: 30	Year Established: 1979
2445 McCabe Way Ivene, CA 92714	Head of Customer Service: John V.		
(714) 557-3550	Trisworth	ZENITH DATA SYSTEMS	ZONIC CORP.
	Geographic Coverage: International Year Established: 1906	1000 Minaules Ave Genvera E. 80025	2000 Ford Circle Millord, CH 45150
	Number of Employees: 121,000	(312) 391-0960	S13)245-1911
			Major Markets: Computer
Terget Industries: Computer.	XITEK CORP.		Manufacturing, OEM Computer
Net Select \$25 Million - \$100	9861 Chartwell		
Million (1982)	Defair, TX 75243 (214) 349-2490	Manufacturing, OEM Perpherals' Terminals and Computer Systems.	Target Industries: Automotive. Petroleum, Chemical, Aerospace
	Major Markets: Correctors.		Contacts:
		Terrort Industries: Fortune 1000	Head of Marketing Vince Heyring
Geographic Coverage: National Year Established: 1970	Manufacturing OITM Computer Systems, Dealer Deshbutor Yanget Industries: Industrial	Smill Dusmess, OEM Computer	Head of Sales: David Staizer Head of Software: James Deal
Humber of Employees, 803	Systems, Dealer Distributor	Equipment	Head of Software: James Deel
weather or Embeddent (m)	Terget Industries: Industrial. Consulting	Terget Applications: OA: Graphics,	Head of Engineering James Webb Head of Customer Service Rick
WESTERN TELECOMPUTING	Contacts:	Accounting . Contacts:	Schreit
		Hand of Manhatan Bahard V. Band	Gentlember Continues International
200 E Kagy Blue Bookman, MT 59715 (408) 596-1511		Head of Marketing Robert K. Reid Head of Saley Johnstrank. Head of Saley Tornstrank. Head of Software Torn Domback. Head of Engineering. Hey Chang. Geographic Confrage: International Year Established: 1979.	Geographic Coverage: International Year Established: 1970
Boziman, Aff 59715		Head of Software Tom Domback	Number of Employees: 60
	Number of Employees: 5	Head of Engineering Hoy Chang	
Marriage Computer	XYCOM, INC.	Geographic Covyrage: International	XYDEGO, INC.
Marufacturing Terget Industries: Pollution: Weather	P.O. 804 984	Number of Errotowees: 1,000	536 Highlands Drive Saton Rouge, LA 70810 (504) 291-5530
Weather		mornour or Employees: 1,000	Maron Houge, LA 70810
Centecis:		ZENTEC CORP.	Major Markets Software House:
Head of Marketing Bob Johnson .	Major Market Computer	2400 Watsh Ave Servis Clars. CA 95050	
Geographic Coverage Intervalored Year Established: 1669 Humber of Employaes: 10	Manufacturing Target Industries: Manufacturing	Santa Clara, CA 95050	Manufacturing, DEM Computer Systems, Maintenance Other
Manha at Francisco	Target Industries: Manufacturing Contacts:	(408) 727-7867	Systems, Maintenance/Other
manage of Englangers 10	Head of Marketing James	Major Markets: Computer and	Sennces
WIGAT SYSTEMS, INC.		Terminal Manufacturing Target Industries: OEM	Target Industries: Manufacturing Target Applications: Process
1875 S State St		Net Select \$5 Milion ~ \$25 Milion	Control
PO Box 539			Het Sales: \$100,000 - \$500,000
Orem UT 84057 (801) 224-6400		Contacts	
Major Markets: Computer	Year Established: 1969		
Manufacturing, Software House;	Humber of Employees: 200	Livrois Head of Software/Engineering David	Head of Marketing Sales Gary Lane Head of Engineering, Robert Milchel Geographic Coverage: National Year Established: 1977
	ZAX CORP.	Head of Software/Engineering David Staterd	Head of Engreening Robert Mischell
	8311 Westminster Ave	Generative Construct International	Year Established 1977
General Business	Westweser, CA 92683	Geographic Coverage: International Year Established: 1973	Number of Sendenser 18

Acres and Data Systems	100	
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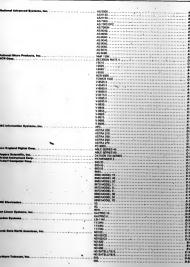
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Mainframes

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Langhages Supported Disapper

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Macriman Hemory 2506 bytes

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Benja BURROUNIS CORP.
R4958
Word Length 33 bit Word Length 32 bit Market M AMBANK, CORR., 476V/TA ATVVIS SERIES Word Length: 31 det Operating System: MVS SP, SVS WASS VSC Languages Supported Cobol, Forrian, Desci, Pascal Missimum Memory: 32M bytes Missimum Memory: 32M bytes Missimum On-Line Starage: 1 20 Missimum On-Line Starage: 1 20 Maaimam On-Live Storage: 10t bytes:
Communications Protocols:
Asynchronous, Synchronous,
Beynchronous, Synchronous,
Beynchronous, Synchronous,
Beynchronous, Synchronous,
Beynchronous, End user
Variede Sales Terms: Purchase,
Losso
Parchase Price: \$1,785,000
Mainlerance; Dr. 755
Date First Installed: 1275 Vandor Sales Terrer: Purchase, Lease Purchase Price: \$2,515,000 Maintenance: On-site Date First Installed: 1978 Number Installed: te Date: 100 — SURROUNDARS CORP.
57450
Weed Leeght: 48-bit
Operating System: MCP
Languages Supported: Cotol,
Fortran, Basic, IPNG
Maximum Memory: 6th bytes
Multiple Ubero: Yes. 50
Maximum On-Line Stemper: 105-4G Deler First Installed: 1983 SURROUGHDES CORP., 5000 SERRES WERT LINE CORP., 5000 SERRES MC CORP., FORT Langer, 45-bit Corp., Morrison Berney: 15th Cytish Masirum Homery: 15th Cytish Masirum On-Line Strenger: 3 20 Cytes. Masirum On-Line Strenger: 3 20 Masirum On-Line S (See Verday Profet Page V-3)
BURROUGHS CORP.
B2210
Word Length: 32-bit
Opensheg System: MCP
Languages Supported Cobol,
Portra's Basic, PRCI PLI
Bletteran Memory: 154b Dyles
Multiple Users: Vini. 80
Massersen On-Lime Storage: 130 500 See Vendor Profile Page V-1) See WHOSE Profile Page V-1)
AMBAIN, CORP.
S48 MCDES, 5950
Operating System: NY3'SP,
WHYX, VMSP, ACP
Lampages Susponted: Cobol.
Forum State, Paccal
Maximum Namony; 32M bytes
Maximum Chiline Storage: 123
Maximum Chiline Storage: 123 Marinese On-Line Stemper. 105 bytes.

Censmanucations Pretocets: Asynchronous: Synchronous: Synchronous: Bestrottes: Total user bestrottes: Total user yearder Sales Terreti: Purchase, Laste Purchase Price: \$3,150,000 Mainteaserous: On-eris Date Priot Installed: 1978 Maximum On-Line Storage: 1 3t Dyllis Communications Presents: Asynchronous, Dynchronous BayerChronous, Dynchronous BayerChronous, Dynchronous Desire Termin: Purchase Least Mantenarren: On-Sto Bayer Feet Newtont (1981 (See Version Pholis Page V-3) s unum I/O Peris: 32 unumications Protocols: tronous ribution: End user der Salas Terms. Purchase. SURROUGHS CORP. 97900 (F H K) SERVES Operating System MCP Languages Rapported Cobot. Forten: Basic Pascal C Minimum Manney: 17th bytes Maintain Memory: 35M bytes Maintain Memory: 35M bytes Maintain On-Line Sterege: 71 Maintain On-Line Sterege: 71 Lease Purchase Price: \$2,750,000 Maintenance: On-site Average Maintenance Fee: \$8,500 Date Piret Installed: 1263 VM:SP, ACP Languages Supported: Cobol. Fortrain Basic, Flacial Mazarram Marnory; 32M bytes Multiple Users: Yes Mazarram On-Line Storage: 1.2G este rohaes Price: \$2,500,000 as First installed: November 1963 CAMBEX CORP., 1631 SENIES West Length: 23-bit Operating System: DOS/VS, DOS/VS OS/VS SYS Languages Supported Cobol, February, State, Pasce Systems Newsyy M. bytes Mades Users of Common Senies Prescolar Asyromomous, Synchronous, Asyromomous, Synchronous, ne Price: \$3.950,000 rence: On site ral installed: August 1982 r installed to Date: 10 — 50 Dee First Installed 1900
BATRO STATE OF THE SURMODANS CORP.
33955
SURMODANS CORP.
33955
Weed Largers, 32-oct
Conting Systems MCD
Configuration Supported Coco,
Fortiers, Basic, RFG
Maximum Memory, 24 bryss
Maximum Memory, 24 bryss
Maximum Memory, 24 bryss
Maximum On-Line Storage; 2 6G
Maxim MEDANIL CORP. 80-5176, 1560 DASP. SP guages Supported: Cobol, ran Basc, Pascal arrum Merneny; 32M bytes tople Users: Yes imum On-Line Storage: 1.20 Abbe herbiese Price: \$25,000 to 200,000 fairmaneer On-ste lote First installed: 1979 herber installed to Debr. Less then m I/O Porte: 32 Nestions Protocols

Lesse Purchase Price: \$304,500 Maintenance: On-site Date First Installed to Date: #5 Number Installed to Date: #5

BURROUGHS CORP. 87830

se Price: \$5,400,000

ASSET CORP. HO SERIES and Langth: 32-bit man Evatery DOS/VS.

Word Length: 48-bit Operating System: MCP Languages Supported: Cobol. Forman Base, IPRG Masimum Memory: 5M tyres Multiple Users: Yes. 80 Majamum On-Lina Storage: 105-4G Majamum On-Lina Storage: 105-4G

DOS/VSE OS/VSI SYS Languages Buppertad: Cobol, Fortran Base, Pascar Minimum Memory: 15M tytes Mastrum Memory: 15M tytes Mustigle Users: Yes Communications Protocols: Asynchronous, Synthonous

Asynchronous Beynchronous Beynchronous Beynchronous Vendor Sales Terms: Purchase Lease Purchase Price: \$150,000 to \$100,000 To S200,000 Maintenance: On-sto Date First Installed: 1979 Number Installed to Date: 10 — 60

Number Vasiahed to Date: 10 — 50.
CAMBERT, COMP.
1641 SERICE
Were Langels: 20-01
Operating System: VOSVVS,
Michael System: VOSVVS,
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Michael Stem: VOSV

MANUFACTURING CO.
4000
Specific Application: Security
Access Cores;
Word Length: 8-bit
Languages Rapported: CAIC Procest
Minimum Memory: 55K bytes
Maximum Recory: 55K bytes
Maximum On-Line Storage: 155M
bytes
Maximum On-Line Storage: 155M
bytes
Maximum IOP Parts: 8

to bhase Price: \$125,000 interagrice: Dealer network e First Installed: January 1974 short Installed to Dete: 50 a Wander Profile Plage V-5)

(See Vendor Profile Page V-5)

CONTROL BATA CORP.

CYSER 170-18

Word Length (D-Dr.

Lengther (D-Dr.

Length

see Price: \$195,000 Hence: On-site Inst Histolied: April 1983 Inndor Profee Page V-6)

Maximum I/O Ports: 24 Communications Presocols: Asynchronous, Synchronous, Baynchronous Beynchronous Desirbution: Sind user Purchase Lesse Terms: Purchase Lesse Sherbution: \$3.793,000 to \$3.793,000 Moreirans Prior: \$1.115 Date First Installed, May 1912

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CONTROL SATA CORP.
CYSEN 178-85
Werd Langth 80-01
Operating System: NOS
Languages Exportant Cobol.
Portrar, Beach, Pascal, RPS
Authority Pascal, RPS
Market Street, St

Mannam On-Line Storage: 6 oc. bytes Mannam NO Pents: 24 Communications Protocols: Asynchronous Synchronous: Bisynchronous Distribution: End user Vendor Sales Tennis: Purchase.

Date First Installed: February 1963
CONTROL BAYA CORP,
CYBER 175
Word Length: 60-bit
Operating System: MOS. MOS/66
Languages Busported: Cobo.
Fortun: Basic, APL, PL/1, Algol LargeCorton: Ballot, APL, PLIT, regeCorton: Ballot, APL, PLIT, regeCorton: Ballot, APL, PLIT, regeMacament Manney, 24t Oyles
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CONTROL BATA CORP.
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Word Langth: 32-bit Operating Speaker. CYGER 200 Languages Supported: Fortun Languages Supported: Fortun Assantier Bellemany: 1654 bytes Baseman Mishmury: 1654 bytes Cammunications Protocols: Aspectivonous Supportivonous

15 COLUMN CONSTRUCTION CONTROL CONTROL

GATA WEST CUREN440 Specific Application: Array
Processor
Ward Length: 35-or
Minard Length:

Mainframes

Purchase Price: \$200,000 to	
\$400,000	Languages Sup Fortran, Basic, E
Maintenance: On-site	
	Minimum Morre
DATAWEST CORP.	Meximum Morre
Specific Application: Array	Communication
Processor	Asynchronous, S
	Vendor Salse T
Word Length: 36-bit Minimum Mornory: 16K bytes Maximum Mornory: 1M bytes	Purchase Price:
	Maintenance: D
	Date First Instal
Mattote Usere: Yes. 32 Maximum I/O Perts: 32 Communications Protocols:	
	DIGITAL SOU
	DEC SYSTEM 2
Beynstronous Distribution: OEM Wender Sales Torres: Purchase	Word Length: 30
	Coorsides Syste
Lease Purchase Price: \$500,000 to	Languages Sup
	Fortrer, Danic, G
	Ofes, Aloct
\$1,000,000 Maintenance: On-ste Date First Installed: 1951	Minimum Herne
	Maximum Memo
DENELCOR, INC.	Multiple Upers: "
6-1000	Communications
Specific Application: Aerospace Word Leagth: 64-bit	Asynchronous, S
	Vendor Sales To

36-bit 9006 8, 9008

Distribution: End user Vender Sales Terms: Purchase, Lasse	Communications Protocols: Asynchronous, SDLC HDLC	Multiple Upors: Yes Mestimum On-Line Storage: 204G	Operating System: NVS. VM:270 Languages Supported: Cobox, Fortes, Dance, Parcel, RPG, APL
Purchase Price: \$200,000	Distribution End user Vendor Salos Terms, Purchase, Lenna	Communications Protection	
Purchase Price: \$200,000 Maintenance: On-site Average Maintenance Per: \$535 Date First Installed: 1981	Purchase Price: \$450,000 Maintenance: On-size	Communications Proteonis: Asynchronous, Synchronous, HDLC Distribution: End user Vender Sales Terms: Purchase.	Minimum Memory: 25th bytes Maximum Memory: 8 3ht bytes Multiple Users: Yes Communications Protocols:
HOMEYWELL INC.	Maintenance: On-site Average Mointenance Fee: \$1,500 Date First Installect: 1951		Communications Protocols: Asynchronous, Synchronous,
OPS 8/44D Word Langth: 35-bit	HOMETWELL, INC.	Purchase Price: \$1,200,000 Maintenance: On-site Average Maintenance Fee: \$3,700 Date Pirot Installed: 1981	Asynchronous, Synchronous, Begynchronous, SDLC, SDLC/SNA, X25 HDLC.
Operating System GCOS 8, GCOS 66	Word Longth: 38-bit Operating Systems: GCOS 8, GCOS		Distribution: End upor Vender Sales Terms: Purchase. Rental Lasse
Congueges Supported: Cobol. Forver, Basic, Pacca, RPG, APL Minimum Memory: 26 bytes Maximum Memory: 16M bytes Minimum College: 15M Maximum On-Line Storage: 35G		DPS 8/7005	Rental Lease Maintenance: On-site
Maximum Memory: 250 bytes Maximum Memory: 16M bytes	Fortran Basic, Pascal, RPG, APL	Word Langth: 35-bit Operating System: GCOS 8, GCOS 66, Mulica	2013A
Maximum On-Line Storage: 35G	Languages Bupported: Cobot Forten Basic, Pascar, RPG, APL Minimum Memory: 25th bytes Maximum Memory: 35th bytes Maximum Memory: 35th bytes Maximum Chr-Line Stonage: 35G	Languages Supported: Cobol.	Word Length: 64-bit Operating System, OS/VS1; MVS, OS/VS2, DOS/VSE
Communications Protocols:	Maximum On-Line Storage: 35G bytes	50, MARKE Languages Supported: Cobol. Fortran, Seace, Rince, APL Minimum Memory: 54th bytes Masterum Memory: 64th bytes Masterum Chillie Sterage: 35G Masterum Chillie Sterage: 35G	OSVS2. DOSVSE
Asynchronous, Synchronous, HDLC Distribution: End user Vendor Sales Terms, Purchase,	Communications Protocols: Asynchronous, Synchronous, HDLC Distribution: End user	Multiple Upors: You	Languages Supported: Cobol. Foreign, Beast, Pascal, RPG, APL, PL/1
	Distribution: End user Vendor Sales Torres: Purchase.	bytes Communications Business	Minimum Momeny: 4 1M bytes
Purchase Price: \$350,000 Maintenance: On-site Average Maintenance Pee: \$1,000 Date First Installed: 1560	Leane Purchase Price: \$880,000	bytes Communications Protectis: Asynchronous, Synchronous, HDLC Distributions End user Yender Sales Torres: Purchase,	Minimum Moreory: 4 1M bytes Mealman Moreory: 25 1M bytes Multiple Uners: Yes Communications Protocols:
	Maintenance: On-site Average Maintenance Fee: \$2,400 Date First Installed: 1980	Vender Sales Terms: Purchase,	Asynchronous, Synchronous, Beynchronous, SDLC, SDLC/SHA, X25, HDLC
HOMEYWELL, INC. OPS 8/50C		Purchase Price: \$1,300,000 Maintenance: On-one	X.25, HDLC Distribution: End year
Word Langth '35-bit Operating System CPS	HOMEYWELL, INC.	Lesse Purchase Price: \$1,300,000 Maintenance: On-site Average Maintenance Fee: \$5,100 Date Pirat Installed: 1990	Destribution: End user Vender Sales Terms: Purchase; Rental, Lease
Languages Supported Cobol. Fortran, Basic, RFG, APL, PL/6.	Word Longth: 35-bit Operating System: CP6		Purchase Price: \$6,800,000 Meditionance: On-one
Word Length: 39-bit Operating System CP6 Languages Supported Cobol Fortus, Basic, RPG, APL, PL/6, Grap, DP, TE Minimum Mamory; 52M bytes Maximum Mamory; 32M bytes Maximum Chi-Line Storage; 122G Maximum Chi-Line Storage; 122G	Werd Longth: 36-bit Operating System: CPS Languages Supported: Cobot Forter: Basic, RPG, API, Grep, IDP, Test. P Minimum Mamory: 16M Index	HOMEYWELL, INC. DPS 65 Specific Application: Distributed DP Word Langet: 36-bit	1000 300304
Municipie Users: Yes	Minimum Moreory: 16M bytes	Word Langth: 36-bit Operating Bystem: GCOS 8	
bytes Communications Protocols	Minimum Memory: 16M bytes Maximum Memory: 35M bytes Multiple Users: Yes Maximum Or-Line Storage: 264G	Fortran Basic, Pascal, RPG, APL.	Operating System OS/VS1, MVS. OS/VS2, DOS/VSE
Asynchronous, Synchronous, HDLC Distribution: End user Vendor Sales Torres, Purchase,		Specific Application: Clarifo and DP Word Langing Select Operating System: GCOS 8 Languages Emperated CoSol, Fortras, Silect, Pascal, RPG, APL, PL/1, Grang, GPSS, Lisp, Statement Stemany: 19th System Statement Shemany: 19th	Languages Supported Cobel. Forver, Basic, Pascal, RPG, APL,
	Communications Protecols: Asynchronous: Synchronolis: HDLC Distribution: End user Vender Sales Terms: Purchase,	Municipal Dears: Yes	PUT Minimum Memory: 4 1M bytes Maximum Memory: 16 7M bytes Multiple Users: Yes
Purchase Price: \$265,000	Vender Sales Terms: Purchase,		Multiple Upors: Yes Communications Proteools:
Purchase Price: \$265,000 Maintenance: On-site Average Maintenance Fee: \$377 Date First Installed: 1661	Long Purchase Price: 3550,000 Maintenance: On-site Average Maintenance Fee: \$24,000 Date First Installed: 1081	Communications Protection Asynchronous, Synchronous, Bayretronous, SDLC, SDLC/SHA.	Paratellia Specialis
HOMEYWELL DIC.	Average Maintenance Fee: \$24,000 Date First Installed: 1981	HOLC Discribution: End user Vender Sales Terres: Purchase.	X 25. HDLC Distribution: Engluser
Word Longth: 35-bit Operating Broton: GCOS 8, GCOS	HOMEYWELL, INC.		X 26. FOX.C Distribution End user Vender Sales Terres: Purchase; Parties, Lases Pershase Price; 56.000,000
	Word Langth: 36-bit Operating System; GCOS 8, GCOS	15,000,000	Purchase Price: \$6,800,000 Maintenance: On-ote
Fortran: Basic; Pascat RPG, APL		Meinterance: On-site Average Maintenance Fee: \$6,000	1003 303394
Congueges Supported: Cotor, PL/1; Fortun: Banc, Pascat, RPG, APL Minimum Memory; 2014 types Meximum Memory; 3244 types Meximum Memory; 3244 types Meximum Chi-Line Sterage; 35G Maximum Chi-Line Sterage; 35G	Fortran, Basic, Pascal, APL, PL/1	1000 3601	Word Longth: 64-bit Operating Bysters DS/VS1, MVS. OS-VS2: DOS/VSE
Meximum On-Line Storage: 35G	co Languages Supported: Cotol; Forten, Senc, Pascar, AFL, FL/I Minimum, Meeney; S4M bytes Masteram Memory, S4M bytes Multiple Users: Yes Masteram On-Live Sterage: 35G	Word Longth: 64-bit	OS-VS2: DOS-VSE
Communications Protecula: Asynthronous, Synchronous, HDLC		Word Longth: 64-bit Operating System: DOS/VS. OS/VS2, OS/VS1, MVS Languages Supported: Cotol. Fortan, Basic, Pascal, RPG, AFL.	Languages Busewick Cobst. Formst, Basic, Psecal, RPG, APL; *PL/1
Asynchronous, Synchronous, HDLC Asynchronous, Synchronous, HDLC Distribution: End user Vendor Salso Terres: Purchase,	Communications Protectals: Asynchronous, Synchronous, HDLC Distribution: End user Vender Sales Terms: Purchase:		Statemen Mannery: 12 SM bytes Massimum Mannery: 15 7M bytes Multiple Users: Yes Communications Processin: Asynchronous, Spectronous, Stagestonous, SDLC, SDLCSINA.
Vender Sales Terres: Purchase, Laces	Distribution: End user Vendor Sales Terms: Purchase:	Maximum Memory: 2M bytes Maximum Memory: 5.3M bytes	Multiple Users: Yes Communications Protocole:
Purchase Price: \$450,000 Maintenance: On-are		Minimum Morneyy 2M bytes Maximum Memory: 6.3M bytes Multiple Users: Yes Communications Protocols:	Asynchronous Synchronous, Beynchronous, SDLC; SDLC/SNA. X 25; HDLC
Laces Purchase Price: \$450,000 Maintenance: On-site Avecage Maintenance Pee: \$2,000 Date Pirot Installed: 1980	Purchase Price: \$1,200,000 Shirtnessor: On one Average Mointenance Fee: \$3,700 Date First Installed: 1980	Beyndronous SCLC: SOLC:FPA	
HOMEYWELL, INC.		X 25, HOLD Distribution: End upor	Distribution: End year Yender Sales Torme: Purchase, Period, Lease Purchase Princ: \$500,000 Stationnamic: On one
Word Langth: 36-bit	DPS 8/79C	X 29, HOLC Distribution: End user Vender Sales Terres: Purchase, Pental, Lesse	Mointenance On the
Languages Supported Cobo.	Operating System CPS	Purchase Price: \$2,000,000 Maintenance: On-shit (See Vandor Profile Page V-10)	100
DPS E/SC Word Longth: 36-bit Operating System: CPS Languages Supported: Cobo. Medicum Moreory: 16th Dytos Medicum Moreory: 35th Dytos Medicum Dr. Line Stormer: 264G Medicum Dr. Line Stormer: 264G	INDERTWILL, INC. DPS 8/9C Word Length: 38-bit Operating Systems CP4 Languages Reported: Cool. Fortest Saso, RPG, APL, Grap, IDP, Test, P Maximum Marrary: 16M bytest		
Meabourn On-Line Storage: 264G	Minimum Memory: 16M bytes Minimum Memory: 64M bytes	3632 Word Langit: 64-bit	Operating Systems OS/VS1, MVS. OS/VS2, DOS/VSS Languages Supported: Cobst. PL/1;

Mainframes

Fortran Basic, Pascat, RPG, APL	Fortran, Basic Pascal RPG, APL	Manmon Memory: 514K bytes	Multiple Upper Yes
Minimum Memory: 4 1M bytes Maximum Memory: 16 7M bytes	PL/I		Communications Projectis:
Multiple Users: Yes	Mesonges Mercory, 16 7M bytes	Multiple Users: Yes	
Communications Protocols:	Measurem Mornory: 33 5M bytes Multiple Users: Yes	Communications Protocols:	Distribution: End user
Appropriate Synthesis	Communications Protocols:	Brynchronous, SOLCISNA - Dietribution; Endluser	Purchase Price: \$700 000
Asynchronous, Synchronous, Beynchronous, SDLC, SDLC:SNA,	Asynchronia Synchronia	Vendor Sales Terra: Purchase:	Date First Installed: Morch 1980
	Asynchronous Synchronous Brainchronous SDLC, SDLC/SNA	Rental Lease	10M
Distribution: End user Vender Sales Terms; Purchase:	X 25. HOLC	Purchase Price: \$335 000	4341-11
Vendor Sales Terms: Purchase:	Distribution: End user		Word Length; 32-br
Purchase Pricer \$3,000,000	Vendor Sales Torres: Purchase. Renta: Lease	Date First tratailed: April 1979	Operating System: QOS-VSE. DOS-VS: VM:370, VM:BSE
Maintenance: On-site	Pumbers Price: \$7,000,000	Number Installed to Date: 6,700	DOS/VS: VM:370, VM:BSE
Number Installed to Date: 85	Maintenance Chiate	1004	Languages Supported: Cobol. Forten, Basic, Pascar, RPQ, API
	Date First Installed: June 1982	4331-2	
1000		Word Leneth, 32 tvs	Minimum Memory 1M tytes
30330	1000	Operating System DOS/VSE DOS/VS VM/070, VM/85E	
Word Length: 64-bit	30438	DOS/VS VM/370, VM/85E	
Operating System OS/VS1, MVS OS/VS2 DOG/VSE	Word Length: 64-bit	Fortish Basic, Pascal RPG, APL.	Communications Protecols:
I nomenture Supposed Codes	Operating System DOS/VSE MVS/SP OS/VS1 DOS/VSE/MF	Fortran Basic, Pascat RPG, APL.	Bayrichronous, SOLC SNA
Languages Supported Cocci. Fortran, Basic, Pascal, RPG, APL	MYSIS DEVOT DUSTNERS	PL/1 Minuteurs Messery: 1M bytes	Pretribution: End user Vendor Sales Terms: Purchase.
	Fortren, Basic, Pascal RPG APL	Maximum Marriory: 4 1M bytes	Rectal Lease
Minimum Memory: 4 1M bytes Maximum Memory: 25 1M bytes		Multiple Users: Yes	Purchase Price: \$200,000
Maximum Memory: 25 1M bytes	Minimum Memory: 8 3M bytes	Communications Protocols	
Multiple Users: Yes Communications Protocols		Brighthonous, SDLC/SNA	Date First Installed: March 1992
Attrictronous, Synchronous	Multiple Users: Yes	Distribution: End user '	100
Bisynchronous, SOLC, SDLC/SNA	Communications Protocols: Asynchronous Synchronous	Vendor Sales Taress, Purchase, Rental, Lesse	4341-12
X 25. HOLC	Boynchronous, SOLC, SOLC:SNA,	Purchase Price: \$555,000+	Word Langth: 32-bt
Distribution: End uper	X 25 HOLD	Maintenance; On-see	Operating System DOS VOP
Distribution: End user Vendor Sales Terms: Purchase,	Distribution: End year	Gete First Installed August 1980	Operating System: DOS VSZ, DOS/VS VM:370, VM:BSE
Purchase Price: \$5.550,000	Vendor Sales Terres: Purchase	Number Installed to Date 1 345	Languages Supported Cotos: Fortrer, Basic Pascel RPQ, APL
Purchase Price: \$5,550,000			Forter, Basic Pascel RPG, APL
Meintenance: On-sie Number Installed in Date: 1,560	Maintenança: On-sine	18M -	PL/1
mumber material to Date: 1,560	Date First Installed: March 1982	4331-11	Minimum Memory: 1M bytes Maximum Memory: 16 7M bytes Communications Protocols:
1994	104	Word Langth: 32-bit	Communications Business
3061D	30835	Operating System DOS VSE DOS VS: VM 370, VM BSE	Bayrichippous Str C-5NA
Word Longth: 64-bit		DOS/AS: AN 310" MARRE	Baynchronous, SDLC/SNA Destribution: End user Vandor Sales Terms: Purchase,
Operating System: DOS/VSE. OS/VS1, MVS/SP, MVS/370		Fortran Basic, Pascal, RPG, APL.	Vendor Sales Terres: Purchase.
08/V81, MVS/SP, MVS/370			
Languages Supported: Cobol, Fortian, Basic, Pascal, RPG, APL	Languages Supported: Cobol Fortran, Basic, Pascal, RPG, APL	Minimum Memory: 114 bytes	Purchase Price: \$700 000
PUT	PL/1 PL/1	Maximum Marnory: 4 1M bytes	Maintenance: On-see
Minimum Memory: 16 7M bytes	Minimum Memory: 9 3M bytes	Multiple Users: Yes	1014
Maximum Memory: 33 5M bytes	Maximum Memory: 33 5M bytes	Communications Protocols Branchronous: SOLCISNA	4341-2
	Communications Protocols	Distribution: Enduser	Word Langth: 32-bit
Communications Protocols:	Asynchronous, Synchronous, Branchronous, SOLC, SDLC/SNA		Operating System DOS/VSE. DOS VS. VM/370: VM/BSE
Asynchronous, Synchronous, Beynchronous, SDLC, SDLC; SNA, X 25, HOLC	Bisynchronous, SOLC, SOLC/SNA.		Languages Bupported: Cobol PL
Beynoverous, SDLC, SDLC, SNA	X 25 HDLC.	Purchase Price: \$370,000	
Distribution: End user	Vendor Sales Torres: Purchase	Maintenance: On-site	Horner Basic Pascal, RPG, APL Minimum Memory: 1M bytes Mesimum Memory: 16 7M bytes Multiple Users: Yes
Vendor Sales Terms: Purchase	Rental, Leage	Date First Inetalled: March 1562	Mesimum Manner 18 7M rules
	Maintenance: On-ste	1944	Multiple Users: Yes
	Date First installed: March 1982	4341-1	
Maintenance: On-orto Date First Installed: October 1981		Word Length: 32 aut -	Bisynchronous SDLC/SNA
Date First installed: October 1981	1864	Operating Bystem DOS/VSE. DOS/VS VM-370, VM-BSE	Distribution: End user Vendor Seles Yerms: Purchase
-	30634	DOS/VS VM 370, VM BSE	Gereni I anna
20410	Word Length: 64-bit	Languages Supported: Cobox Fortran, Basic, Pascer, RPG, APL.	Purchase Price: \$995,000
Word Langue 54-bit	Operating System: DOS VSE MVS/SP, OS VS1, DOS VSE/AF	PL/I Basic, Pascar, RPG, APL,	Maintenance: County
Operating System DOS/VSE. OS/VS1, MVS/SP MVS/370	Language Supported Colors	Ministers Memory: 1M bytes	Meintenance: On-see Date First Installed: March 1981 Number Installed to Date: 800
OSIVS1, MVSISP MVS(370	Languages Supported: Cotor, Fortran, Bessc, Pascal, RPG, APL,	Maximum Memory: 4 1M bytes	Number Installed to Date: 800
Languages Supported Cocci. Fortran, Basic, Pascol, RPG, APL.			1884
Fortran, Basic, Pascal, RPG, APL,	Minimum Memory: 8 3M bytes		4341-9
PL/I	Minimum Memory: 8 3W bytes Manimum Memory: 33 5W bytes Multiple Users: Yes		Word I anoth: 10.00
Meanum Memory: 16 7M bytes Maximum Memory: 33 5M bytes	Communications Protocols:	Distribution: End user Vender Sales Terms: Purchase,	Operating System: DOS/VSE. ODS/VS VM/370; VM/85E
Multiple Heart Yes	Asynchronous, Synchronous,	Yenger Bases Terms: Purchase,	DOS/VS VM/370; VM/BSE
Multiple Users: Yes Communications Protocols: Asynchronous Synchronous: Beynchronous SOLC: SOLC:SNA.	Beynchronous, SDLC, SDLC, SNA.	Rental, Lease Purchase Price: \$860,000	Largueges Supported Cobel PL Forten Basic Pascal RPG APL Minimum Memory: 1M bytes Maximum Memory: 4 1M bytes Mustiple Users: Yes
Asynchronous Synchronous:			Fortren Basic Pascal RPG APL
Beynchronous, SOLC, SOLCISNA.	Distribution: End user Yender Sales Terms: Purphase.	Date Front Installant Conserve 1670	Manager memory: 1M bytes
	Vendor Sales Terres: Purchase.	Date First Installed October 1679 Number Installed to Date: 5,005	Mustale Linear: Yes
Distribution: End user Vendor Eales Terms: Purchose. Rennel Lesse	Rantal Lesse		
Secret Lance	Maintenance: On-site Date First Installed: March 1562	1044	Boyndronous SDLC/SNA
Mointenance: On-site	The same of the sa	4341-10 Word Leneth: 32-bit	Beynchronous SDLC/SNA Distribution: End user Vendor Sales Terms: Purchase

guages Sapported: Cotol: in recent Memory; 512K types comun Memory; 15M bytes hole Weers: Yes warmandering Protocols: nohinosis SDLC* shadon: End Leri dor Sales Terms: Purchase; ML Lesse thase Price: \$140,000 Memoric: On Site 1 Print Intestible: July 1980

IRRE
SYSTEM 736-4
West Length 126-bit
West Length 126-bit
West Length 126-bit
Lenguages Suspected: Cobox, RPG
Masteram Meeony; 2M bytes
Masteram Meeony; 2M

TEBLO3-5
d Largett 32-bs
gailing System. CPF
gailing System.
gailing Supported. Colori, RPG
gailing Stages. CPF
gailing System.
gailing System

num Memory: 64X bytes num Memory: 126X bytes ple Users: Yes numbations Promos

ex End user have Price: \$50,000 nersence: On-site: Return to discusing facility Frost Installed: 1960

MATER STATES, INC. ife Application Nation Specific Application, manual Modicine
Word Length: 16-bit
Operating System: V70
Languages Supported: Fortran,
Dasc, Assertide M DGS
Minnrum Memory: 128K bytes
Multiple User: Yes
Maximum On-Line Storage: 24M

ATEK STATES, INC.

hase Price: \$100,000 briance: On site: Return to facturing facility Piret installed: 1671

INFORMATEK STATES, INC. SMIS IV Specific Application, National icine
di Cength; 16-bit,
rating System; V70
pueges Supported; Fortran,
c. Assembler M DES
than Momeny: 120X bytes
igne Users; Yes
imum On-Line Stevage; 20M

Lease Purchase Price: \$150,000 to \$150,000 200 enance: On-site, Return to acturing facility First Installed: 1981 or Installed to Deer 100 -

s: Yes and user Terms Durch

reference Price: \$180,000 to

PL SYSTEMS, INC.
4448
Weed Langth; 54-ber
Operating System: OSVS,
MYS SP; DOSVSE: WAR70
Languages Sappented Code
Fortura, Base: Pascal C
Milliams Memory; 28 bytes
Milliams Memory; 28 bytes
Multiple Userie: Ven
Desthation: Cod user

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Dataware's conversion approach provides the solution to management's conversion problems and facilitates the recovery of the initial capital investment in systems programming and development.

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Mainframes

Operating System: OS/VSI MYSISP DOS/VSE, WAS70 Languages Supported: Cabol: Fortian, Basic, Places, C Ministrum Marriery; 150 Dyses Masterium Hermony; 150 Dyses M Coase Purchase Price: \$262,000 to \$394,000

Date First Intended: Docember 198

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La urchase Price: \$547,000 to \$11,000

mance: On-site
first Installed: 1982
or Installed to Date: 10 — 50 MAGNINGON COMPUTER SYSTEMS, INC. Mag. 25 West Langer, 22-bit Operating System: DOS/VS, VA. MYS. DOS MYS. DOS.
Languages Supported: Cotol, PL/1;
Fortum, Seer Pascal, APL
Minimum Microsty: 512K bytes
Maximum Memory: 512K bytes
Maximum Memory: 6th bytes
Maximum Con-Line Storage: 160
bytes
Meximum Con-Line Storage: 160
bytes

Counting System COSVS, VM. Living Costs of Systems COSVS, VM. Living Costs of Systems Costs of Systems Basic Pasida AM, RUIT Committee Costs of Systems Basic Pasida AM, RUIT Costs of Systems for Living Systems for Syste

MAGNUSON COMPUTER SYSTEMS, INC. M60:31 Word Length: 30-bit Operating System: DOS/VS, VM, MVS, DOS

Operating System DOSYS, NM, MY, DOS WHY, DOS WHY

INAGNUSON COMPUTER SYSTEMS, INC. 1800-47 Word Length, 32-br Operating System: DOS-VS, VM, MYS, DOS Languages Supported Coool, Forten, Basic, Pasce, API, IPI, Raiseum Memory; 24 Oyes Masterum Memory; 25 Oyes Masterum Memory; 25 Oyes Masterum Memory; 25 Oyes Masterum Memory; 26 Oyes Masterum Memory; 26 Oyes

MAGNUSON COMPUTER SYSTEMS, INC. MAO, 43 Word Length: 32-bit Operating System: DOS/VS, VM. MVS: DOS

NAVE DOS Supportent Corp.

NAVE DOS Supportent Corp.

Loriza, Basic, Pasca, APL, Pull

Racinum Memory: 18th Cytes

Racinum Memory: 18th Cytes

Racinum Christo Sterage: 16G

Racinum Chris Regischiscous, SDLC, SDLC/SNA, HOLC Dissibution: End user Vendor Sales Terrest Purchase; Revoit, Lease Purchase Price: SSA, 000 Raintenenge: On-set, TherSpany, Date First Installed; March 1931 Number Installed; March 1931 Number Installed; 19 Date: 50 — 100

MODUTEST SYSTEMS, INC. MARK 5 Word Langth 32-of Operating System XEROX CPR. CPR

Operating Bystem XEROX CPI CPR Language Rupperick Cobol, Fortran, Bass Richard Memory, AM byses Macateum Memory, AM byses Alynchronous, Bayrochronous Desthatuses Chief Teams Purchase, Lessa Parchase Price £70000 Macateum Throfonty Macateum Throfonty

Maximum On-Line Storage: 19G bytes
Maximum ILO Peris: 32
Communications Presidents
Asymptomous, Syndromous,
Asymptomous, Syndromous,
DOC Oncord On State On Date First Installed: Decumber 1979 Number Installed to Date: Lass than 10 (See Vendor Profile Page V-14) HAKOBATA COMPUTER CORP.

QM-1 Maximum Memory: 2M bytes Multiple Users: Yes, 63 Maximum On-Line Storage: 30 7G AMAZINIANE CONTROLLED STATEMENT OF THE S

Meanman Chi-Lines Sterage: 30 76 bytes Dries Commiscations Protocolis. Asymptomous. Synchronous Distribution: Ero due Yender Seles Erone. Purchasel Purchase Price: 1400, 200 19 \$700,000 Biointernance: On 518 Averáge Mealmenance Fee: \$2,500 Number Installed to Optic: 10 — 50 (See Ventor Price Page IV IV)

Con Versich Proble Progr. VI-19
ALT TOURLA AUTHANICED
STATERAS, 1900.
STATERAS

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Vice President, Dataserv Equipment, Inc., 509 Second Ave. So., Hopkins, MN 55343,
Plus Control (1973) 2757



Mainframes

SVBTRAM, INC.
A3.5600 (Mr. A5.500 (Mr. A5.

name price: \$575,000 archae Price: \$575,000 archae Price: On site energy Blambanace: Fee: \$2,500 site First Installed: February 1980 archae legislated in Date: 100 archae legislated in D

HATIONAL ADVANCED SVETENS, INC. A5/8130 Word Langth: 32-bit Operating System MVS, SVS, VM 370, VS1 VM 370 V611 Languages Supported: Cobol Fortran Basic, Pascal RPG: API PU1 Formin Beier, France RPC, APC, PC1.
Moneyam Merengr, 4M bytes
Marsham Merengr, 10M bytes
Merengr

MATIONAL ADVANCED SVSTSMES, INC. AS-0150 Word Longth: 32-bit Operating System, MVS, SVS, VM-370 VS-1 PL/I Missimum Marmery: 46t bytes Missimum Memory: 18th bytes Margine Lawrence Francisco Margine Lawrence SDCC, SDC GNA Destination End user Vendor Sales Treess. Purchase Partial Lease Purchase Pices, 31, 160 000 Purchase Pices, 31, 160 000 Date First Sestated: March 1983

Date Fruit Installed Morch 1963
MATIONAL ARVANCES
MATIONAL ARVANCES
MICHAEL ARVANCES
AND MICHAEL ARVANCES
MI ethase Price: \$1,640,000 interance: On sta

Average Maintenance Fee: \$6 400 Date First Installed, April 1980 Number Installed to Date: 100 ----

Vendor Seles Terres: Purchase Rantal Lasse Purchase Price: \$1,800,000

NATIONAL ADVA

SOC STATEMENT OF THE ST

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Biymphornous SOLC SOLCISNA
Distribution: End user
Varieds Sales Terms: Punchase /
Leade
Parchase Price: 52.400.000
Maintenance: Chr. site
Average Maintenance Fas: 58.200
Date Print Installed: 1980
Marinder National of Date: 10 — 50 NATIONAL ADVANCED SVSTEMS, INC. AS/7000N Ward Longth: 64-bit Operating System: 08/VS1. NVS-SP

Osgonicios
MATIONAL ADVANCED
SVSTSMS, INC.
AL 1946
AL Communications Protocols: Des Streaming Distribution: End user Vendor Seles Tarms: Purchese. Lessa Purchase Price: \$2,000,000 Marchenance: On-ste Date First Installed: 1982

NATIONAL ADVANCED SYSTEMS, INC. AS 8040 Word Length: 32 or Operating Systems M/S/SP Languages Supported: Cobol Fortran, Balic, Pascal RPG, APL MATIONAL ADVANCED SYSTEMS, INC. A8/8050 Word Langer, 64-bt Operating Systems MVS, VM/270 MVS.59

Operatory System: NYS, VKS270
Lindpaperator: Cock, PL/1,
Lindpaperator: Cock, PL/1,
Lindpaperator: Cock, PL/1,
Lindpaperator: Cock, PL/1,
Michael Marchy: 201 bytes
Mastream Marchy: 201 bytes
Mastream Marchy: 201 bytes
Mastream Marchy: 100 bytes
Mastream Marchy: 100 bytes
Privating
Dashbuster: En upge
Dash Fortins, Basic, Pascal RPG, APL, PL/1 Minimum Memory: 6M bytes Macinium Memory: 16M bytes Maring Users: Vis Centremotellore Prejacela. Asynchronous: SPLC, SDLC;SNA, May APRICA SPLC, SDLC;SNA, X 25, HDLG. x 35 HOLC Distribution End user Vendor Sales Terms: Purchase Pendu Brand Purchase Pendu Balantanace: On-site Remape diagnostics Lease Purchase Prior: \$2,000,000 Maintenance: On-s/s Date First Installed: 1582

Dest First Insistée 1952
MATIONAL ADVANCES
SVETTRES, INC.
A4:1900
Word Langts EA-LH
VAGTU, EAV.
MATIONAL STORY
Word Languages Supported Cobol.
Fortist Assembly 1964 Days
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Commanications Protocole. Data
Destibution (End Languages)
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Destibution (End Languages)
Wendor Salies Termin. Purchase;
Learn HATIONAL ADVANCED SYSTEMS, INC. A8:8050 Word Length: 32-bit Operating System: NYSISP Lenguages Supported: Cobol. Fortun (Senc. Pascal. RPC. APL. PL1 PLT
Minimum Memory: SM bytes
Maximum Memory: 324 bytes
Maximum Memory: 324 bytes
Maximum Memory: 324 bytes
Maximum Memory: 325 bytes
Communications Prosecula: X 25
HDLC, Asynchronous, Splict Shack
Distribution: End use

Purchase Price: \$3,500,000 Maintenance: On-sis Date Price Installed Documber 1982 Number Installed in Date: (per Pon

MATIONAL ADVANCED SVETEMS, INC. AS:1070 Word Langth: 64-bit Operating System: MVS. VM:370, MVS:581 2 Operating Systems M/S 50° CDC Language's Bioparied Code Language's Bioparied Code Language's Bioparied Code Language's Bioparied Code Language's Bioparied Language L MVS/SPR 2 Languages Supported: Cobol. Fortran Basic Pascal RPG API

Fortran Users, Places, 19ths, err., PL/I Binarum Memory; 15th bytes Basimum Memory; 20th bytes Bulliple Users; Yes Streaming, 20th bytes Streaming, 20th bytes Vendor Bales Terms: Purchase, Lesse Purchase Price; \$4,000,000 Malessance; On-de Date Find Indisable; 1901

MATIONAL ABVANCED SVSTEMS, INC. AS 18060 Word Langth: 54-bit Operating System: MVS/SP2, VM:370 VM:370 Languages Supported: Cobol. Fortar: Assembly Minimum Memory: 16M bytes Meximum Memory: 6MM bytes Multiple Users: Yes Communications Protocols: Data Communications Protocols: Data

Communications Protocols: Cuts Streaming Distribution: End user Vender Ealers Termis: Purphase Lease Perchase Lease Press \$3,200,000 Maintenance: Christia Date: Lins than, 10 July 10

iet) rd Langth: 32-bt irating System: (PX guages Bupported: Cobol, num Memory: 256X bytes main Memory: 2M bytes ple Users: Yes, 24 main On-Line Boorges: 2 6Gformation of Protocols: yearnouse. Synchronous, sinitiation: End use: seder Sales Terms: Purchase seders Sales Terms: Purchase seders Sales Constitution of seders on the Constitution of seders of Protocological Vay 1921 color testaded to Date: 100 -Number Installed to Date: 100 500 'See Vandor Profile Page V 14)

Mont towers
1-8050
Word Langth, 32-bit
Operating System IRX
Languages Supported: Cobol
Fortran Base, HPG
Minimum Memory, 512K bytes
Maximum Memory, 39-bytes
Maximum Memory, 39-bytes
Maximum On-Line Storage: 2-8G
Maximum On-Line Storage: 2-8G

Mainframes

VM370 DOS-VSE OS/VSI Languages Supported: Cocot Fortun Pascal RPG, APL PUT Melman Memory: 3M bytes Masminen Or-Line Storage: 100 mmen UP-Line Blorage; 100 M meurications Protocols: nothronous, Spuchronous, mothronous, Spuchronous, mothronous, Spuchronous, mothronous, Spuchronous, industrial services, Purchase chase Pricer \$120,000 to 5,000 1000 Herander On-site First Installed: December 1960 Wendor Profile Page V-15)

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NIZDORS COMPUTER CORP.
NIZDORS COMPUTER CORP.
NIZDORS COMPUTER CORP.
NIZDORS COMPUTER CORP.
NIZDORS COMPUTER C bytes
Communications Protocols:
Asynchronous, Synchronous,
Brynchronous, SDLC, SDLC SPA
Distribution: End user
Vendor Sales Terms: Purchase
Parchase Price: \$175,000 to
\$500,000

O MATCH: On-oth Manninance: On-site
MIXDORF COMPLITER CORPSERO MODEL 76
Operating Systems NEOCS/VSE,
VMS710 COSIVSE; COS VS1
Limpuiges Supprised Cobol
Potent RED, APP, TM bytes
Maximum Manning; Std bytes
Maximum On-Line Storage; SOG
Introd
Maximum On-Line Storage; SOG
Introd

bytes
Communications Protocols:
Asynchronous Synchronous
Baynchronous SDLC, SDLC:SNA
HDLC HDLC Distribution: End user Vendor Sales Terra: Purcha Purchase Price: \$300,000 to \$500,000 Maintenance: On-sile PARADYNE CORP.
Its SPONSE
Word Langth: 22-or
Operating System: PARADYNE
Languages Supported: Cotool
Meximum Memory: 2M bytes
Meximum Memory: 2M bytes
Meximum Memory: 3M bytes
Meximum Vol. 1965
Meximum States
Tel. 1965
Meximum On-Line Storage: 5 6G
India.

Operating System 1100 OS Languages Supported: Cobol. Fortran Basic, RPG, PL/1, Joval

Assertation (PDC, Pu.1, Juved Assertation (PDC, Pu.1, Juved Assertation Minimum Marcery (204 bytes Minimum Marcery (204 bytes Marcery (204 bytes)) (PDC, Pu.1) (PDC, Pu.2) (PD

See Vendor Profer Page V-15)

SPERRY CORP,
100:60 SERIES
Word Length S6-00
Operating Series: 1100:00
Languages Supported Codol
Fortish Basic RPG Pu.1.
Assembler Joval
Ricimum Memory: 512X bytes
Maximum Memory: 512X bytes
Memory: 51

Maximum On-Liver Storage: 4G bytes Communications Psychologist Asynchronous Synchronous Distributions First Justines Lease Vendor Sales Perses, Purchase Lease Proces 51,000,620 to \$12,000,000 Average Statementer Feet: 500,000 Date First Installed: 1971 Number Installed to Date: 500

SYNAPSE COMPUTER CORP.

Number Installed to Date: SCO SPERRY COOP, 1100/90 SERIES 1100/90 SERIES 100/90 SERIES 100/90 SERIES 100/90 SERIES 100/90 SERIES 100/90 SERIES Maximum On-Line Storage: 40 bytes Communications Proteople: Asynchronous Synchronous Destroyate: Tod user Yendor Sales Terms: Purchase Leade Purchase Prices \$2.855,000 Haymenarce On-sits Date First Installed: July 1982

Mariner On-Line Blonge: 105 bytos Maximum (U) Porte: 566 Convenincations Protocole: Asynchronous, Synchronous, Boyrchonous, FOLG: Destillations, Erd user Vender Sees Terms: Purchase, Porte: Sept. 100,000 National Confess Date First Installed July 1902

LEAP FIRST, 1903.

TOM J.

TOM

Word Length: 32-bt Operating System: SYNTHESES Lenguages Supported: Coool Pascal

Operating System: SYNTH-2025 Profession and Systems (March 1992) Profession and Systems (March 1992) Marchane (March 1992) Marchane (O Profes 1993) Marchane (O Profes 1993) Marchane (O Profes 1993) Marchane (O Profes 1993) Marchane (March 1994) Marchane (March 199

TELEFILE COMPUTER PRODUCTS, INC. Tas PRODUCTS, INC.
T85
Word Length: 22-bit
Openating Bystem: TOF-V. TOF-R
Lenguages Supported Cobot.
Fortun: Bass, Places. G
Missieum Memory: 125K bytes
Maximum Memory: 250k bytes
Maximum Memory: 50k bytes
Maximum On-Line Storage: 105G

Maximum On-Line Storage: rups bytes. Meadman I/O Percis: 565 Communications Protocole: Asynchronous, Synchronous, Esynchronous, HOLG Distribution, End user Percial Losse Percial Losse Percial Losse Percial Losse (See Vendor Protes Page V-20) (See Vendor Protes Page V-20)

THE LEFTLE COMPUTER PRODUCTS, INC. TO COMPUTER PRODUCTS, INC. TO COPATRO STATE OF THE COMPUTER PRODUCTS OF THE COPATRO STATE OF THE COP

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performance/footprint.



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Ade" training, and it's available new. Ade is happening. Mittary and scientific compute spoilcations are already emerging. The Departmat of Defense has adopted Ade as the basis for futura program development, four software engineers nee a functional understanding of this newly designed and anguage. You need Gould ALE—the first compre-

It's easy. Because ALE is package

naturally easier to use and speeds up the learning process. Because ALE Interfaces with the Gould Universal Transferring Essouthe (JTY**, he subnotised Gould Implementating Essouthe (JTY**), he subnotised Gould Implementation of the URS** operating systems (you'll anjoy a programming anvironment that lets you concentrate on Ada instruction. Since ALE incorporates the Gould CONCEPT/32** family of

real-time performance.

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renous. Synchronous.
renous. Synchronous.
risios: ODM
facility Terms; Purchase
se Price; S21,000 to \$50,000
heres; Ch-sire
p Maintenance Fee; \$300
endor Profile Page V: 1)

200 Word Length: 32-bit Opending System: MPS Lenguages Busported: Forton, State, Pascel Assambly Minimum Memory: 12N Oyno Methylo Users: Yes, 32 Measinum On-Line Storage: 1909A

Clow Ventor Profile Page V.O.
APOLLO DOSSOPPTER, MIC.
CHAND COMAN PROCESSING
3YSTEM
Werd Langin: 35-cir.
Changin: 35-cir.
Changin: 35-cir.
Changin: 15-cir.
Cha

Management On-sis 17:00 APPLED BROTTAL DATA SYSTEMS, INC.
DOCOD COMEN PROCESSING
Operating Systems (GOLD, DAY,
Operating Syste

Distribution: End user Purchase. Parchase. Parchase Perchase. Parchase. Parchase. Parchase. Parchase. Parchase Perchase. Parchase. Parchase Parchase. Parcha

Superminis

nure Memory: 128K bytes de Users: Yes. 12 num On-Line Streens COMPUTER COMBOLES, INC. POWER 5:55 Word Length: 16-bit Openating Bystem: PERPOS Languages Supported: Cobol. Fortun. Basic, C Nathipic Users: 19-20 Hastimen On-Line Storage: 19-20 Hastimen On-Line Storage: 19-20 Average Maintenance Fee: \$450 Date First Installed: 1982 Maintenance On-sie, Remote dagnostics Average Maintenance Fee: \$700 Data East Installed: 1980 Americal Resistances in Sec. 1905

AND A CONTROLL CORPS.

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A Dete First Installed: 1980
DROUTEL EQUIPMENT COMP.
DROUTEL EQUIPMENT ON P.
DRO m 10 Ports: 12 Assistant No. 1 - Acceptance of the Communications Protection. Assistance and Section 1 - Acceptance of the Communication of the Commun Masteum Ch-Link Storage: 19 2: bytes Communications Protection: Asynchronous: Synchronous Distribution: End user Vendor Sales Terms: Purchase. Rectal; Lesse Purchase Prices \$202.000 (See Vandor Public Page V.5) Color Vendor Projek 1-50
COMPUTER YALK, INC.
COMPUTER YALK, INC.
COLOR C Number Installed to Vo. 500 Year Vendor Profile Page V-S) COSEPURIRAPISIC COM-CORE 118 Specific Application Typoseting Hazarian Memory 120k Dytes Multiple Users: Yes, 18 September 120k Dytes Multiple Users: Yes, 18 September 120k Dytes September 120k Dytes September 120k Dytes Date First Installation May 1978
DISOTAL BOUNDESST COMP.
VAX 11/722
World Longing Standard
Longingers Supplied Code
Longingers Supplied Code
Longingers Supplied Code
Longingers Supplied Code
Mackings Users, "Longing Plus Standard Plus Stand Massimum Ce-Line Storage: 33 18/ Vytes Massimum VO Ports: 12 Coverunications Protocole: Bysychitropis Disphasion: End user Vendor Sales Teres: Purchase, Rental. Lease Purchase Price: \$60,000 to \$150,000 Milietenance: On-sie: Remote degrostos: Return to manufactura tactay.

Date First Installed: June 1975 Number Installed to Date: 50 — 100 (See Vandor Profile Page V-6) ADS/NTS/ Lenguages Supported: Octor, Fortur, Basic, Pascat RPG, APL, FUT C Maumum Menney: 1M byte Maumum Menney: 1M byte Maumum Menney: 16V bytes Maumum On-Live Stanger 19G bytes JSC.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.000 - 150.00 Ger Vinder Profes Figs V-6

BAYA GERERAL CORP.

BCU-PE MY-1000

BCU-PE MY-1000 Della Filest Installated: 1992
FOWERS TYTONS, 1993.
FACOD-100
Week Langth: 12-2th
Week Langth: 12-2th
United The Colory Colory State
Languages Buppermet: Colory Fortra's Daser, Francis, APE, Ful's, C
Minimum Memory; 511 Dyrics
Bustimum Memory; 510 Dyrics
Bustimum Memory; 510 Dyrics
Bustimum Colory; 1995.
State State State State State
Bustimum Color Bustimum Color Bustimum Memory; 1995.
State S OMPUGRAPHIC CORP. MI 132 seelife Application: Typeseting seel Length: 16-bit leimum Memory: 125K bytes subrum Memory: 125K bytes subrum Cor-Line Storage: 65M Debt Plast beautiful: 1902

Bodar Lal, Southeaster Comp.

Week Langer, 200

Governing System McG.

Governing Syste Injuries of Period 20 Communications Proceeds: Beyondroom Distributions Proceeds: Beyondroom Distribution: End user Vendor Sales Termic Purchase, Rental Lesse Purchase Price: \$75,000 to \$200,000 Maintenance On site: Trind carb Versor Bales Terms: Purchase: Leste: Purchase Price: \$20,000 to \$80,000 Maintenance: On elle Average Maintenance Pre: \$380 Date First Installed: 1963 .(See Vendor Profile Page V-7) COMPUSING PHIC CORP.

CHE 180
Specific Application: Typesetting Weet Langth: 18-bit. 1946 bytes Mississan Memory: 1264 bytes Maximum Memory: 1264 bytes Maximum Memory: 1264 bytes Maximum Memory: 1264 bytes Maximum Corp. DATA GENERAL CORP. ECLIPSE NY 6000 Word Langer S2-01 Operating System ACS/VS. AOS/RT32 Lenguages Supported: Cobot-Forman Stacc, RPG, APL, PL/1 Minimum Momony: 1M Dyles Sauthernam Momony: 4M Dyles Sauther Sees Yes, 96 Marshum On-Line Stenage: 6G Marshum On-Line Stenage: 6G Ose Vando Frittin Page 1-3)
PORTTAL EXPRENSIBILITY GORP,
VAX 11/190
Werd Length: 52-01
Operating System: VAIS
Lengthings Supporter FLUT, Dass, C
Management Supporter FLUT, Dass, C
Management Memorry: MB bytes
Management MB bytes
MB bytes draum I/O Ports: 12 Assimption (IV) Personal Communications Prosecols. Beynotronous Selectuation: End user feeder Select Terms: Purchase. Sental: Lases Hurchase Price: \$100,000 to 1000,000 200.000 sintenance: On-see versige Meintenance Fee: \$1,750 sie First Installed: 1950 sie First Installed: 1950 —

POMERATION, INC.
Febbol 200
Ward Length: 32-bit
Operating Bysham DOS, DOS/VS,
OS/VS/2M DOS/VSE, VMSS; MYS,
OS/VS/2M DOS/VSE, VMSS; MYS,
Languages Responsed Cooks;
Fortran, Bass, Pacca APIL, PL/I, C
Biticinson Memory; SIV bytes
Maximum Memory; SIV bytes
Maximum Memory; SIV bytes
Maximum Memory; SIV bytes
Maximum Do-Lina Storage; SG Macinium On-Linu Storage: 3/3 Dylan: Macinium I/O Perfe: 124 Macinium I/O Perfe: 124 Communications Protectis. Asynchronous, Bayesteronus Distribution: CRM Vendor Estato Terms: Purchase Purchase Price: \$100,000 to 1450,000

Dishelance CELF

Throthese Price 1900,000 to 1250,000 to 1250,000

Mumber Instance to Desir 6
FORMATION, POPULATION, POPU

And the first Price Approach Conference of the State of t

Communications Protocols: Asynchronous, Begindronous Destination; OEM Vanded Sales Terms: Purchase Purchase Price: \$120,000 to \$300,000

Average Manufacture Test 5: 155
POLIM-PLANE VYTTENS, INC.
1YTERS 1700
Week Langus, 2-4-28
Langus, 2-4-28
Average Manufacture Del 21: 500
Average Manufacture Del 3: 500
Average Manufacture Deg 9: 1:500
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Date First Installed: February 1 GOMAD, SEC. 201700 Word Langtle: 20-bit Operating Systems: UNIX, MFY Languages Septembel: Cobol. Sections: Missings; (2004, https://doi. Missings: Missings; (2004, https://doi. Missings: Missings; (2004, https://doi. Missings: Unix: Yes. 96 Commissions: Synthymous: Destrictions: Unix: Synthymous: Destrictions: UNIX Vendors Sales: Terms: Purchise

Cook First Installed: February 1980
207178
Weet Langhy 32 or Coperating Systems (MCC MP732)
Interior Management (MC Mprost Mp

000 enance: On-site ge Maintenance Fee: \$1,200 First Instalant: 1875

Core Piet Installed: 1973
MARRIES CORES
HARRIES 200
HA

Superminis

HARRIS 800		Average Maintenance Fee: \$500 Date First Installed: 1982	Wendor Sales Tarms: Purchase Maintenance: Third-party
Word Length: 48-bit Operating System: VOS	HONEYWELL, INC.	Date First Instance, 1982	Date First Installed: June 1983
Languages Supported Coops	Word Length: 32-brt	HONEYWELL, INC.	(See Vendor Profile Page V-11)
Fortran Basic, Pascat, RPG, APL.	Operating System, GCOS		(See Fernoon Prome Page 1-11)
	Languages Supported: Cobol	Word Length: 32-bt	INCOMMET
	Fortran Basic	Operating System: GCOS. GCOS BOS	LOTUS ADVANCED
	Minimum Memory: 1M bytes	GC08908	Word Leneth: 16-bit
		Languages Supported: Cobol.	Word Langth: 16-bit Operating System: DCOS Languages Supported: Pascal, C.
Maserum On-Line Storage: 86G	Multiple Users: Yes, 112	Forvan, Basic RPG	Languages Supported: Pascal, C.
bytes	Meximum On Line Storage, 3G	Minimum Memory: 2hl bytes Meximum Memory: 4hl bytes	
Communications Protocols: X 25	bytes	Manager aversary: Not bytes	Minimum Memory: 128K bytes
Asynchronous, Baynchronous Distribution: End user	Communications Protocols: Asynchronous, SDLC SDLC/SNA	Multiple Deers: You Measware On-Line Storage: 21G	Multiple Users: Yes
Vendor Sales Terms: Purchase	X25 HOLC	Intes	Meximum On-Line Storage: 12G
Purphase Price: \$150,000	Distribution: End user	Communications Protocols	Meximum I/O Ports: 4
Mantenance: On-site	Vendor Sales Terres: Purchase	Asynchronous, Synchronous	Occupant CO Person
Date First Installed 1981	Lease		Communications Protocols: Asynchronous, Bisynchronous
	Purchase Price: \$130 000	Vendor Sales Terms: Purchase.	Vendor Sales Torres Purpluse Purchase Price: \$50,000 fo
HEWLETT-PACKARD CO		Lease	Vendor Sales Terres Publique
HP 3000 SERIES 64	Date First Installed: 1981	Purchase Price: \$250,000	Purchase Price: \$50,000 fo
Wood Laneth: 12-but		Maintenance: On see	
Word Length: 32-bit Operating System: MPE	HOMEYWELL, INC.	Average Maintenance Fee: \$700 Date First installed: 1982	Maintenance: Third-party Date First Installed: June 1983
Languages Supported: RPG. Fortran Cobol Basic Pascal, SPL	DPS 7/35	Date First Helpforb 1982	Date First installed: June 1983
Fortran Cobol Basic Pascal, SPL	Word Langth: 32-bit	1004	
Minimum Memory: 2M bytes	Operating System: GCOS/BOS	4321	INCOMMET
Maximum Moreory: SM bytes	Languages Supported: Colod,	Word Leneth: 32-bit	LOTUS BASIC
Multiple Users: Yes, 144	Fortran Basic RPG		Word Langth: 16-bt
Maximum On-Line Storage: 6.40	Micercum Memory: 1M bytes Maximum Memory: 2M bytes	Languages Supported Cobot PL/1, Fortran Sanc Pasca: RPG APL Minimum Memory: 1M bytes Maximum Memory: 1M bytes	Operating System: DCDS
Communications Protocols:	Multiple Users: Yes 15	Fortran Banc Pascar RPG APL	Languages Supported: Paricel. C:
Sanctyonous Bounchronous SDLC	Maximum On-Line Storage: 2.5G	Minimum Memory: 1M bytes	Ada
SOLCISMA X 25	byles	Meximum Memory: 1M bytes	Minimum Memory: 120K bytes
Distribution: Fred user	Communications Protocols:		Maximum Memory: 3M bylds Multiple Users: Yes. 4
Vender Sales Terms, Purchase	Asynchronous Synchronous	Communications Protocols:	Maximum On-Line Storage: 12G
		Bisynchronous: SDLC/SNA	
Purchase Price: \$165,000	Vendor Sales Terms: Purchase	Distribution: End user Vender Sales Terres: Purchase.	
	Lease	Vender Sales Terres: Purchase.	Communications Protectle: Asynchronous, Bayechronous
Date First Installed: 1901	Purchase Price: \$94 000	Purchase Price; \$100,000	Asynchronous, Disynchronous
(See Vandor Profile Page V-11)	Maintenance: On-ste	Mandanana Charle	Distribution: Third-party Vendor Sales Terms: Purchase
	Average Maintenance Fee: \$385 Date First Installed: 1982	Merylenance: On-sile Date First Installed: March 1963 (See Vendor Prolie Page V-11)	Vendor Sales Terms: Purchase
HOMEYWELL, INC.	Date First Installed: 1982	(See Vendor Profile Page V-11)	Purchase Price: \$20,000
6/92	AND THE RESERVE TO SERVE TO SE		Maintenance: Third-party
Word Length: 32-bit	HONEYWELL, INC.	ILEKE INDUSTRIES BATA	Date First Installed: June 1983
Operating System GCOS	DPS 7/45	SYSTEMS, INC.	
Languages Supported Cobol. Fortran, Basic	Word Langth: 32-bit	1000	INCOMMET
	Word Length: 32-bit Operating System: GCOS, GCOS BOS	Word Length: 32-bit -	LOTUS EXECUTIVE
Managem Manager AM Subse	Languages Supported Conce	Operating System CPS, AOS	Occupies Senters DOOG
Mastrum Moreory: 4M bytes Multiple Users: Yes. 64	Languages Supported: Copo: Fortran Basic RPG Minimum Mercory: 1M bytes Minimum Mercory: 4M bytes	Linguages Supported Cobox, Fortran Basic API, Minimum Marrany, IM bytes Maximum Messery: IGM bytes Missimum Messery: IGM bytes Missimum On-Line Storage: 4G -	LOTUS EXECUTIVE Word Length: 16-bit Operating System: DCOS Languages Supported: Poscal, C. Add
	Minimum Memory: 1M tystes	Malana Managa III bidas	Ada
Maximum I/O Ports: 82	Meximum Memory: 4M bytes	Maximum Manager, 1644 button	Minerum Nemory: 128K byles
Maximum I/O Ports: 82	Multiple Users: Yes Maximum On-Line Storage: 11G	Multiple Heary: Yes: 256	Minesum Memory: 128K bytes Meximum Memory: 3M bytes
Communications Protocols:	Maximum On-Line Storage: 11G	Maximum On-Line Stoceop: 4G .	Multiple Upors: Yes, 4 Meximum On-Line Storage: 1:2G
Asynchronous, SOLC:SNA X25, HDLC	bytes	Maximum I/O Ports: 95	Meximum On-Line Storage: 1:20
POLC .	Communications Protocols. Attent/propus, Synchronous	Maximum I/O Ports: 98	Maximum &O Parts: 5
Vender Sales Terms: Purphase	Alignovanous, Synavanous		Meximum I/O Ports: 5 Communications Protocols:
	Vender Sales Terres: Purchase	Asynchronous, Synchronous, Beynchronous, X 25	Communications Protection
Purchase Price: \$110,000		Distribution: End user: OEM	Asynchronous Baynchronous
Maintenance: On-ste	Purchase Price: \$130,000	Vendor Bales Terms: Purchase.	Distribution: Third-party Yender Sales Terms, Purchase Purchase Price: \$20,000
Average Maintenance Fee: \$800	Mamtenance: Co-ste	Lease	Purchase Price: \$20,000
Purchase Price: \$110,000 Maintenance: On-site Average Maintenance Fee: \$800 Date First installed: 1981	Average Maintenance Fee: \$400	Purchase Price: \$250,000 to	Maintenance: Thrd-party Date First Installed: June 1983
(See Vendor Profile Page V-11)	Date First installed: 1962	\$2,500,000	Date First Installed: Arm 1983
		Maintenance: On-site: Western	
HONEYWELL, INC.	HOMEYWELL, INC.		INFOREX, INC.
8194	DPS 7/56	Date First Installed; January 1983	
Word Langth: 32-bit	Word Length: 32-bit Operating System: GCOS: GCOS:60S	Date Pirst Installed: Jenuary 1983 Number Installed to Date: 2 (See Vendor Profile Page V-11)	Specific Application: Date Entry Fit
Operating System: OCUS	Operating System GCOS	(See Vendor Profile Page V-11)	Management
Languages Bupported: Cocol.	GCOS/BOS		Word Longily 8-bit
Word Langth: 32-bit Operating System: GCOS Languages Supported: Cobot Fortran Sasc Minimum Memory: 1M bytes	Languages Supported: Cobol. Fortran Basic, RPG	INCOMMET	IMPOREX 9000 Bacothe Application: Date Entry File Management Word Lengthr 8-bit Operating Bystem: DOS Lenguages Supported: Cocol Miletraum Manney; 256K bytes Maximum Menney; 256K bytes Maximum Menney; 256K bytes Maximum Monney; 156K bytes Maximum On-Line Storage: 160M Maximum On-Line Storage: 160M
Meximum Memory: 5M bytes	Minimum Memory: 2M bytes	Word Length: 16-bit	Lampages supported: Coop
Multiple Lineral Yes	Maximum Memory: 4M bytes	Occasion Protest DCCC	Marinery Marinery 250K bytes
Multiple Users: Yes Maximum On-Line Storage: 20	Multiple Dearw Yes	Operating System DCOS Languages Supported Pencil C.	Multiple House Vos
	Multiple Users: Yes - Maximum On-Line Storage: 10G		Maximum On-Line Storage: 180M
		Minimum Memory: 128K bytes	
Asynchronous, Synchronous, SDLC/SNA, X.25, HDLC		Maximum Mercery: 3M bytes Meximum On-Line Storage: 12G	Communications Protocols:
SOLCISMA X.25, HOLC	Asynchronous, Synchronous	Mestrum On-Live Storage: 12G	Asynchronous, Sisynchronous Distribution: End user
Distribution: End user	Distribution: End user	bytes	Dietribution: End user

Vendor Sales Terms: Purchase Lease Maintenance: On site Date First Installed: 1981

Date First Installed 1961

BONE YVEELL, INC.

BONE OF THE LINE OF

Vendor Sales Terms: Purchase, Lease Purchase Price: \$200,000 Maintenance: On 589 Average Maintenance Fee: \$500 Date First Installed, 1982

Four-Phase introduces The Series 2000...

for people who the automating their office was

Deep relations? Well the service pro-make the Service 2000 year first use of Well The other 2000 year first use of the present processed being too. But a present constant of leap, too. But Abstrala microprosece based Series 2000 years from Four Phase Series 2000 years from Four Phase Series 2000 years from Four Phase were that leep to series and with 876-bit comparers like the one or port platter, them note into one community, a single office, or series and series of the series of series and series of series and series of the series of personnel processed on series and series of series and series and series series and series serie

So what do you be for your investment? The entry level System 220 features the powerful 6809E microprocessor and gives you up to four easy-to-use workstations. The ISOS operating system inside lets you run a wide variety of business applications such as order entry.

applications such as order entry, inventory inquiry, text editing and electronic worksheet. Getting started couldn't be essite:

Then there the System 240 to which you can upgrade as your applications grow. It will give you up to eight workstations and all the memory capacity you'll need to support them.

memory capacity you'll need to support them. If you need more capacity than it System 240, move straight to the sophisticated System 260. It's the bridge between today's requiremer

for low cuts and similar to demanda for high performance. The Spents of Maria in 102-38 compare based on Monocola MAGOOD nitropersonaes. Monocola MAGOOD nitropersonaes and features a powerful operating switten detected from UNIX¹⁰. Spents and all the productivity is well bring when call Five Pierro, the leader in office assumation nec. oaksigs service when call Five Pierro, the leader in office assumation to callege, and the death And micropersonaes technology Call micropersonaes technology. Call micropersonaes technology. Call micropersonaes technology Call micropersonaes technology.

MOTOROLA INC. Information Systems Group



Four-Phase Syste The Office Automation Com

Superminis

Vender Bales Terms: Purchane, Rertail, Lease Purchases Price: \$50.600 to \$105.210 Months Price: \$50.600 to \$105.210 Months Price: \$565 Cells Print Installed. July 1981 Mumber Installed to Date: \$50 — \$50 [See Vender Profile Page V-11]	日本 日
MEDA/RET DORP. MEDA/NET 1000 Word Longer 1000 Word Longer 1000 Longuages Supported: Basic Minimum Memory: 512K Dytes Maximum Memory: 512K Dytes Maximum Memory: 40 Dytes Maximum On-Line Storage: 500M Maximum On-Line Storage: 500M	Ma da da da da da da da da da da da da da
bytes Massimum NO Portic: 128 Communications Protocols. X 25 Statistication: End user Vender Sales Terms: Purchase, Refrai; Lesse Purchase Price: 568,000 to 590,000 Marrismance: On-sis; Remote decreated:	RF
Defe Piret Installed: June 1982 Ramber Installed to Deter Loss that 10 (See Vendor Profile Page V-13)	343740
MEGA/MET 2000 Wood Lengit: 32-bit Operating System: ACOS Languages: Supported: Basic Meximum Memory: 512: bytes Meximum Memory: 641 bytes Meximum Memory: 641 bytes Meximum Co-Line Storage: 26 Meximum Co-Line Storage: 26	25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

sts. X.25

um I/O Ports: 128 unications Protocols. X.25 uties: End user Seites Terms: Purchase.

in I/O Porte: 54 skaldens Protocole: mout. Synchronous. orous. SULC. X 25. NOLC lee: End user laies Teems: Purchase stor: On-ste. Remote cs, Return to manufacturing o ee Vendor Profile Page V-14)

An of the control of

Maximum Dir Line sem-prining and the control of th

moth: 32 tot na Brettern: SINTRAN SE gueges Supported: Cobol tran, Parcel RPQ, Simula érrum Memory: 765K bytes cleues Memory: 23M bytes ligie Users: Yet cleuem On-Line Storage: 4 3G Maximum On-Line Bronger e unique byte Maximum I/O Puris: 8 Germanications Protecols: X 25, X 21 AD-NET, Cardibusion: Lind user Vendor Bales Termis: Purchase, Harnitz Lisses, Manifesticanical: Christic Reput I/O Date Print Islandino: 1179 (See Vendor Protie Page V-15)

RMM d.Laman corer-a graph: 30-bt ord Langth: 30-bt presenting System: OS:02, UNIX 7 grappes Busperted: Cobol-ran: Besic, Pascal, RPG, Corel insum Memory: 510X System sizes Memory: 4M bytes tiple Users: Yes, 32 yes steman On-Lies Storage: 1500

ber installed to Date: 5.000

Maximum I/O Ports: 6 Communications Protocols: X.25, HDLC: X.21 HDLC, X 21 Distribution: End user Vendor Salex Terms: Purchase: Rental Lease Maintenance: On-sits. Return to manufacturing lastity. Data Fire! Installed: 1879 HORSK BATA HORTH AMERICAN, INC. NO-560 Operating System; SINTR

direct III all direct Council 200 forest Length 32 det Appending System OS 32; UNIX 7 Appending System OS 32; UNIX 7 Appending System OS 32; UNIX 7 Appending System On Line Storage 100 to 100 forest Maximum Marrory 116 byte Storage 100 forest Maximum On-Line Storage 100 forest 100

Moreory: 512K bytes Moreory: 4M bytes Journ: Yest 32 Op-Line Storage: 50

Choose the publications you need to keep up with your part of the computer world.



مثث

Superminis

m Memory: 1M bytes im Hemory: 4M bytes Users: Yes. 63 im On-Line Storage: 5G bytes Maximum I/O Perts: 12 Communications Protocols: Asynchronous, Synchronous Besinchronous X 25, HDLC retion: End user or Sales Terms: Purchase. Vendor setes re-Leane Purchase Price: \$112,000 to 17 000 erage Maintenance Fee: \$946 in First Installant: 1502

PRIME COMPUTER, INC. PRIME 550-8 Weed Length: 32-bit Operating System: PRIMOS Languages Supposed: Cobol Fortur: Basic, Pascal, RPG, PU1. begly mule Memory: 1M bytes smule Memory: 4M bytes tole Users: Yes 64 stream On-Line Storage: 5G

Oyles Storage: 5G Dyles Storage: 5G Dyles Meakman A'O Ports: 14 Storage Storag Lease
Purchase Price: \$112,000 to
\$1165,000
Maintenance: On-site Person
diagnosis:
Average Maintenance Fee: \$785
Date First Installed: February 1981

PRINE COMPUTER, INC.
PRINE TIO
Word Length: 32-bit
Operating System: PRINCS
Languages to Appended Cobol
Forum State Pascel RPO, PUT,
Assemble.

imum Memory: 1M bytes imum Memory: 5M bytes imum Memory: 5M bytes tiple Users: Yes 96 sivuum On-Live Storage: 5G nase herchase Price: \$213,000 to 314,000 hastenance: On-site: Remote leanouses.

STOS go Maintenance Fee: \$1,262 Srat Installed: 1979

Destribution: End user. Third-party Vendor Sales Terms: Purchase Vendor Sales Terms: Purchase Leane Pauchase Prior: \$356,000 to 5470,000 Maretenance: On-sire Remote dagnostics Avenage Maretenance Fair \$2,384 Delle First Installed: June 1981

Dote Trail resisted. July 1997.

**PRINTEC COMPETER, INC.

**PRINTEC C

PYRAMID TECHNOLOGY CORP. PYRAMID COMPUTER Word Length 32 ol Operating System LINE Languages Supported: Fortun Pascal C. cai C insum Memory: 1M bytes ursum Memory: 5M bytes tighe Useou: Yes, 128 uinnum On-Line Storage: 1 5G

Maurissan On-Line Storage: 1 SG bytes
bytes
Maurissan I/O Peres: 128
Maurissan I/O Peres: 128
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NOOP Profile Page V-17)

NOOR COMPUTERS

NOOP THAT Y-190
Specific Application: CAC
Werel Longels: 20-ber
Operating System: LIAX
Largauges Bappinder Cortlen,
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Largauges Bappinder Cortlen,
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Matipal Users: Yes, 50
Matipal Users: Yes, 50
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SYSCOM INTERNATIONAL SYSCOM 3200 Word Langth: 32-bz Languages Supported: Cobol SOSC

Languages Bapported: Circol.

Marievani Mesergi: 295K typisi.

Masaram Memory: 194K typisi.

Masaram Morrory: 194K typisi.

Masaram 10 Purisi. 1945 192

Dylas.

Masaram 10 Purisi. 194

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Gote Vincon Projett Prige VI (19)

"ANDREAS COMPUTER, INSC.
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NOR 610P

Conversing System (ULARICAN OF FORCE)

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Anychronous Synchrolous

Communications Projectic

Anychronous Synchrolous

Extraction of the Conc.

Anychronous Synchrolous

Communications of Synchrolous

Anychronous Synchrolous

Communications of Synchrolous

Communications of Synchrolous

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Computer Synchro



CORNER

The trouble with many of today's better known small business computers is they box you into a single user system. So after your big initial investment, you still have a single user system. You always will.

Zeus 4 is the first multi-user, multi-processor micro at single user prices. The Zeus 4 is less than one cubic for and weights 24.6 pounds.

and weighs 24.6 pounds.
Yet, its like four separate, powerful small business
computers in one. It allows up to four users to share
a common data base or work independently. Each has
his own CPU, 64K of RAM and I/O ports. That means

and greater reliability.

You needn't worry about running out of storage capacity either. The Zeus 4 comes with a built-in hard disk so users share up to 19MB of storage, about twice as

You'll enjoy maximum flexibility in software app cations too, because Ze_bs 4s MUSE operating system runs programs competible with CP/M. Plus MUSE provides extensive file management functions typical

neres another big advantage. The Zeus 4 is

designed for low maintenance, low down-time. Its

So if repairs are ever needed, modules are simplyreplaced through CSMs limited warranty program. Maybe the best thing is that you can buy the

infigured for four users).

The Zeus 4 from OSM, the latest in a family of overful, multi-user small business computers. It's the

er small business computers. Its if ou grow without busing you in. ore,

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of a semplement temberants of Challed Streemer's, Sec.

Zeus 4 because

We want you to compare the features and benefits of the Zeus 4 multi-user multi-processor computer to computers you already know about When you do we know you'll decide on a Zeus 4.

... because multi-user is better than multiple single users.

... because multi-processor is better than single processor

...because standard programs are better than non-standard programs. ·

OUR SPECS AT A GLANCE-

Other features Real time clock (ont.)

WL: 25 lbs.

Ht/Wd./Do: 8 x 13 x 15"

Cooling Convection

Oper temp: 16-38°C.

Rel. Hum.: 10-80%

Alt: 10,000 ft. Domest volt: 115v 60hz

Storage temp.: -40-71°C.

Ram Memory: 64KB/user Max Memory 320KB No. of users: 1 to 4 Std. Serial Ports: 2/user: 2/master Opt. Parallel Ports 1/4-users 1/master Winchester disk storage: 6-19MB Backup facilities: 250KB floppy

CPU:280A

Opt backup facilities: 1MB floppy File interchange capability: 250KB.8" floppy

Intl. volt: 230v 50/60hz Amp: 05-1A Power: 75 VA

Yendor Sales Terms: Purchase	Maximum On-Line Storage: 12014	Word Length: 20-bits	Average Maintenance Fee:
Purchase Price: \$10 700	bytes	Operating System: Unx	Data First Installed: August
Maintenance: NCR Corp Date First Installed: 1981	Maximum I/O Ports: 4	Languages Supported: Fortran, C	Number Installed to Date: 2
Date Park Installed: 1961	Communications Protocols: Asynchronous, Synchronous	Minimum Memory: 2M bytes	
APPLIEG DIGITAL DATA	Distributor: OEM	Mytople Users: Yes. 32	BUHKER RANG IRFORM
SYSTEMS, INC.	Vandor Sales Terms, Purchase	Maximum On-Line Storage: 1.2G bytes	BR1000
MULTIVISION & S	Purchase Price: \$5 000	Communications Protocols:	Men
Small business	Mantenance: Third curty	Asynchronous Synchronous	Secondar Association CA
Word Length: 5-bit	Date First Installed, December 1962	Distribution: Entruser	Specific Application: OA Word Langth: 15:32-bit Operating System: UNIX
Operating System CP M	(See Vendor Profile Page V-2)	Distribution: Endluser Vendor Sales Terres: Purchase	Oneration System PAY
Languages Supported Basic			Languages Supported: Cobo Fortran Basic Pascal C. Adv
Minimum Memory: 64K bytes	ARGENT COMPUTER	Maintenance: On-site, Remote	Fortran Basic Pascal C. Ad
Multiple Users, Yes 4 Maximum On-Line Storage: 600K	PRODUCTS, INC.	dagnostics	Maximum Memory: 512K byte Maximum Memory: 5M byte
bytes	ARDENT 20		Maximum Memory: 5M byte
Meximum I/O Ports: 4	Word Length: 16-brt	BTI COMPUTER SYSTEMS,	Multiple Users: Yes 64 Meximum On-Line Storage:
Communications Protocols:	Operating System: BLISS MICOS	STI 5000	MEXITURE OF-Line Storage:
		Men	Maximum I/O Parts: 126
	Laneuropes Supported: Cobol:	Word Length: 16-bit	Communications Protocols:
			Asynchronous Synchronous
Purchase Price: \$6,900	Minimum Memory: 64K bytes	Languages Supported: Basic Moneum Memory: 64K bytes	Arpanet
Maintenance: NCR Corp	Meximum Momory: 125K bytes	Monetum Memory: 64K bytes	Distribution: End uppn
Date First Installed: 1982	Multiple Users: Yes. 12	Maximum Memory: 64K bytes	Vendor Sales Torens: Purch
APPLIED TECHNOLOGY	Mexicum On-Line Storage: 10	Multiple Users: Yes Meximum On-Line Storage (400M	Purchase Price: \$40,000 to
	Maximum I/O Ports: 4	bytes	SS 000 000 Mayrenance: On-site
EPICURE 8000	Communications Statements	Communications Protocols:	Date First Installed: Novembr
	Coronvanications Protocols: Asynchronous, Synchronous	Asynchronous, Bisynchronous	Number Installed to Date: 10
Specific Application, Hospitally			(See Vendor Profile Page V-3)
Languages Supported: Assembler	Vendor Sales Terms: Purchase	Vendor Sales/Terms: Purchase Purchase Price: \$36,000 to \$50,000	
Merenum Memory: SEX bytes	Purchase Price: \$10,000 to \$50,000	Purchase Price: \$38,000 to \$50,000	BURROUGHS CORP.
Meanware Memory: 250K bytes Madigle Users: Yes	Maintenance: Third party Date First Installed: Are 1961	Marrienance: On-site Remote	R20 SERIES
Maximum On-Line Storage: 1929/	Number Installed to Date 100 -	Date First Installed: June 1978	Small business
tyles	500	Number Installed to Date: 3,500	Word Length: 16-bt
Communications Protocols:	***	See Vendor Profile Plage V-3)	Obsessing obsesse ping
Asynchronous	ARDENT COMPUTER		Operating System: BTOS Languages Supported: Oppor Forten Basic: Pascal Minimum Memory: 128X byte Meanman Memory: 640K byte
Distribution: End user OEM	PRODUCTS, IRC.	BUDGET COMPUTER	Manierum Manney: 129X Inch
Fernder Sales Terros: Purchase:	ARDENT 40	SYSTEMS	Maximum Memory: 640K byt
ease Purchase Price: \$25,000 to \$80,000	Mrv	MICRO PLUS BO	Muttiple Users: Yes Meximum On-Line Storage:
Maintenance Dealer	Word Length: 16-bit Operating System: RUSS MICOS.	Swall business	Maximum On-Line Storage:
late First Installed: September	MS DITS	Word Langth: 8'15-bit Operating System: DASIS	Communications Protocols:
	Languages Supported Colors	Operating System: (JA225)	Asynchronous, Synchronous.
furniture installed to Date: 50	Languages Supported Color. Fortran, Basic Pascal, C	Larguagea Supported: Fortran, Bissic, Pascel C	Beynchronous, X 25
	Minimum Memory: 64K bytes Maximum Memory: 128K bytes	Minimum Memory: G4K bytes	Distribution Endured
See Vendor Profile Page V-21	Masurum Memory: 1285 twees	Meanment Memory: 512K byten	Distribution: End user Vendor Sales Terms: Purcha
		Multiple Users: Yes. 5	
LPPLIED TECHNOLOGY			Purchase Price: \$20,000
PERTURES, INC.	bytes	bytes	Maintenance: On 510
Mess	Maximum I/O Ports: 4	Meainem I/O Ports: 58	
Word Luneth: 16-br	Communications Pretocols:	Communications Protocols:	(See Vendor Profile Page V-3)
Operating System PICK	Asynchronous, Synchronous Distribution: OFM	Asynchronous	
enguages Supported: Basic:	Vendor Sales Terms: Purchase	Vender Seles Terms: Purchase	BURROUGHS CORP. DIO SERIES
	Purchase Price: \$14,000 to \$60,000	Lacoe	
Southern Memory: 256K bytes			Ward Language Silver
Assimum Memory: 1M bytes			Word Langth: 8-bit Operating System MPL II. CNS MCP
Autopie Users: Yes 64	Number installed to Date: 100	Average Meintenance Fee: \$150 Date First Installed: August 1979	CMS NCP
Assimum On-Line Storage: 1.60	500	Date First Installed: August 1979	Languages Supported Cobs Fortran Basic RPG
cytes Communications Protectie:	BBK COMPUTER CORP.	Humber Installed to Date: 50	Fortran Basic RPG
ANTONOOUS PROSECUTE	C.50	(See Vendor Profile Page V-3)	Minimum Mornory: 126K byte Materium Memory: 512K byte Multiple Users: 7es. 8 Maserium On-Line Storage: 4
enthronous febribation End user rander Sales Terms: Purchase	Min	BUDGET COMPUTED	Materiale Memory: 512K byte
ander Sales Terms Purchase	Word Langth: 20-bit	SVSTEMS	Munipie Users: Yes, 8
		MICRO PLUS AT	print
orchase Price: \$40,000 to \$90,000		Smed business	Communications Protocols:
lamienance: On-stc		Word Length: 8/16-bit	Asynchronous Synchronous
verage Maintenance Fee: \$600 ete First Installed: 1977		Operating System: TURBO DOS	Disynchronous, X 25 Distribution: End user
		Lengueges Supported: Fortran, Sense Pascal C	Distribution: End user
lumber installed to Date 250	Maximum On-Line Storage: 600M		

Get your computer system to run your business so your business doesn't run you.



Men			
	CALIFORNIA COMPUTER		Distribution: OEM
Word Length: 16-bit	SYSTEMS	CENTURION COMPUTER	Versior Sales Torms: Purchase
Operating System: PIS BLISS	SCINI-LINE 3000	CORP.	Purchase Price: \$24 000 to \$30
COBOL			
Languages Supported: Cobol	Word Length: 8-bit	Small business	Date First Installed January 19
Fortran Basic Pascal C	Operating System: CP M MP M	Word Length: 8-bit	Number Installed to Date: 100
Minimum Memory: 256K bules	Moreover Memory 64K bytes	Operation System CP M	500
Maximum Memory: 512% bytes	Maximum Memory: 256K bytes	Languages Supported CPL	
Multiple Users: Yes 30	Multiple Users: Yes. R	Manager Supposed Crit	CENTURY COMPUTER COR
Maximum On-Line Storage 384M	Maximum On-Line Storage: 20M	Maximum Mamaner 256K trutes	CC360
byles	bytes	Mustole Users: Yes. 3	Small tempera
Communications Protocols	Meamon I/O Ports ()	Maximum On-Line Storage: 22M	
	Communications Sentencels: 05,232		Word Length: 8 bit
Asynchronous		bytes	Operating System: COS
Distribution: OEM	Distribution: Third-party	Measman I/O Ports: 4	Languages Supported: Cotol:
Vendor Sales Tarms: Purchase	Vendor Sales Terms: Purchase	Communications Protocols:	Basic
Purchase Price: \$11,785 to \$14,770	Purchase Price: \$9.995	Bisynchronous	Movmen Memory 128K bytes
Maintenance, Trind-party	Maintenance: On-side		Masesum Memory; 1M bytes -
Date First Installed: 1960	Date First Installed: December 1982	Vandor Sales Terres: Purchase	
		Purchase Price: 515 000 to 518 000	Maximum On-Line Storage 32
BYTROMIX CORP.			DV265
			Massaum I/O Ports: 32 ·
			Communications Protocols
Word Length: 16-bit	AYSTEM 300	100	Asynchronous Synchronous
Operating System: IRIS RUSS	Small business	(See Vendor Profile Page V-4)	Brayrichtonous
COROL BLISS	Word Length: 8-bit		Vendor Sales Terms: Purchase
Languages Supported Copy	Operation System CP M	CENTURION COMPUTER	Purchase Progr \$22,000
Fortran Basic Pascal C	Languages Supported Colors	CORP.	Municipal Price: \$22 000
Minimum Memory: 64K bytes	Fortran Basic Pascal C .	SERIES 5200	manufacturing facility. Third-part
Multiple Users Yes: 2	Minimum Membry: 64K bytes	Small business	Average Maintenance Fee: \$25
Maximum On-Line Storage: 20M	Maximum Memory: 256K bytes	Word Length: 8-bit	Date First Installed: March 1971
bytes	Multiple Users Yes: 8	Operating System CPU6	Marriser Installed to Date: 4 20
Meximum I/O Ports 3	Maximum On-Line Storage: 2 414	Languages Supported: CPL	(See Vendor Proble Page V-4)
Communications Protocols:		Minerary Memory 64K types	
Asynchronous	Maximum I/O Ports: 6		
	Distribution: Third-certs	Maximum On-Line Storage: 32M	Small tuspess
Mannersance: Trivid party	Vendor Sales Terms: Purchase	twies	- Ward Length 15-od
Date First Installate 1977	Purchase Pager \$5 000	Maximum I/O Ports: 7	Operation System: CPM, MPA
	Marriagance: Charte	Communications Protocols	CPM 66
CALIFORNIA COMPUTER	Date First leadefact: April 1950	Brynchronous	Languages Supported Colors
SYSTEMS	Number Installed to Date: 100 -	Datribution: OEM	
CALSTAR			Basic Assembly
	1,000	Vendor Sales Terms: Purchase	Mineram Memory: 126K bytes
Small business		Purchase Price: \$21 000 to \$25 000	Maximum Mernery: 154 bytes
Word Length: 8 bit	CALIFORNIA COMPUTER	Maintenance: On-site	Nutsiple Users: Yes: 45
Operating System CP-M	SYSTEMS		Maximum On-Line Storage: 500
Languages Supported: Copci.	SYSTEM 400 .	Number installed to Date: 2 000	
Fortran Basic Pascal C	Small business		Masteum I/O Ports: 12
Minimum Mercory 64% buses			
Magazzum Mersery: 129K twees	Operating System: CPM	CORP.	Asynchronous Bereichtereus
Multiple Users, Yes. 2	Meanur Memory: 10% tytes	SERVES 5200	Vendor Seles Terms: Purchase
Measure On-Line Storage: 2 414	- Maximum Memory: 40% bytes	Small humans .	Purchase Price: \$5,000 to \$10.1
bases	Multiple Deers, You A	Word Langth: 8-bit	Maintenance: On-site. Return to
Maximum I/O Posts 2	Manager On Cine Steeres 2 684	More Langue o-ce	manufactures facets. Descent

for Sales, Termis, Purchase hase Price: \$4,860 to \$11,000 tesasce, Return to ductumng facility. Trind-party Ferst Installed: January 1960 bersick Page V-49 Vendor Public Page V-49

mum I O Ports. 4 Communications Protocols
Asynchronous Synchronous
Boynchronous Telex
Distributions I Telex
Distributions I Cell Third-party
Ventor Sales Termis Pauchase
Purchase Price S5 600 to 517 000
Manufacturing lacinly. Third-party
Dask Prins (Installed Junuary 1983)
Number Installed 10 Date: 250

640:00
Strail busmess
Word Length: 10:00-be
Operating System: REGILUS
User, RWCOS SWC-9ASC
Lenguages Septembel: Octor
Lenguages Septembel: Octor
Lenguages Septembel: Octor
Lenguages Septembel: Octor
Meanners Mannary 2007; bytes
Mazignian Memory: 512K bytes
Mazignian Memory: 512K bytes
Mazignian Users You
Mazieners On-Lune Sterage: 20M

CRE SYSTEMS, INC.
680-32
Small busness*
Word Leegth 16:32-bit
Union Mile Coll SMC-04-00
Leegth 16:32-bit
Lee

ortran Basic Pascal C instrum Memory, 256K bytes aurum Memory; 1M bytes utiple Users; Yes. 16 aurum On-Line Storeer; 33

SYSTEM 616 BUPER 5 Small business Wood Length, 15-bit Operating System (DP M 66 Languages Supported Cotol: Forma Basic Pascal Pt-1 C Marinum Memory; 65K bytes Multiple Users: No Massmum Memory; 256K bytes Multiple Users: No Massmum On-Line Storage; 7M Massmum Cotol: 12 Storage; 7M

rd Length' 6-bit eration System: CP-M, DOS (I

Distribution: OEM Wender Bates Torms: Purchase Purchase Price: \$20,000 to \$100,000 Mashrum NO Ports: 32 Communications Protocols: Asynchronous Synchronous Destributions: End user Vendor Sales Terms, Purchase, Protos Leader Purchase Price: \$28 000 Purchase Price: \$28 000 Destributions of the Sales (See Vendor Portiols Page V-5) (See Vendor Portiols Page V-5) Operating System: AVOS Languager Supported: Cobol. Fortran Basic Pascal Minimum Memory: 64t bytes Maximum Hemory: 21t bytes Maximum Hemory: 21t bytes Mittigle Users: Yes. 32 Maximum On-Line Storage: 2 40 hosts. Lease
Purchase Price \$25,000
Marchase Price Co. 505,000
Marchase Price Installed: 1975
Number Installed: 1975
Number Installed to Date: 100 — 600 First Installed: June 1982 Date Port Installed: Ally 1982 CONTINUES AND 1982 C GRC SYSTEMS, INC. Word Length: 16-bit Word Length: 16-bit Operating System: CPUS-1 Linguages Supported Trans, Basic Maximum Memory, 129K bytes Maximum Memory, 129K bytes Maximum Memory, 129K bytes Maximum Calus Storage; 2 4G Communications Protocose: Anynchronous, Beynchronous, 500.0 Datribuson: End user Vendor Sales Terres; Purchase Purchase Price: \$100.000 to \$250.000 Maintenance: On-see Date First Installed; 1979 CR60)
Mer
Word Langth: 16-bit
Operating System: XAMOS
Languages Supported: Cotol:
Pascal Assembler
Minimum Memory: 128K bytes
Maximum Memory: 512K bytes
Maximum Memory: 512K bytes
Maximum Memory: 512K bytes
Maximum On-Line Storage: 1 2G CONTENT, INC.
CO m I/O Ports: 16 mications Protocols. trious, Synchronous hydro Maximum I/O Ports: 10 Communications Protocols: Asynthomous, SDLC, HDLC Distribution: End user Vendor Sales Tarms, Purchase. OS-4 SYSTEMS
Mer
Werd Langht: 16-bit
Operating System; OS4
Langharper Supported: Cobol.
Fortrain Basic Pascal
Michigan Memory; 646 bytes
Maximum Memory; 120K bytes
Maximum Memory; 120K bytes
Maximum Other No
Massimum On-Line Storage; 2 4G ment I/O Pertix: 15
ment I/O Pertix: 15
ment I/O Pertix: 15
mentications Prelocole:
chronous. Synchronous.
chronous
or Sales Terms: Purchase
hase Price: \$4 500 to \$70,000
Perti Installed: January 1978
per Installed: January 1978
per Installed to Date: 10,000 Operang system, AVCS.
Languages Separated Co.
Forbar Basic Recol Aco
Forbar Basic Recol Aco
Market Basic Recol Aco
Market Basic Recol Aco
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Market Basic Recol
Market Basic
Market CONTEST, MAN CONTE num I/O Ports: 32 nunications Protocols: Ironous, Bisynchrono PUTER AUTOMATION. um I/O Porte: 32 unicatione Protocele ronous, Bisynchrono

Distribution: End user Vendor Sales Terres Devices

Operating System: PIODS: AOS Languages Supported: Cobot, Basic Marieman Memory: 256K bytes Marieman Memory: 1M bytes Marieman Memory: 1M bytes Marieman On-Lane Storage: 140 Governmenterstone Protocolis: Hasp, Asynchronous, Synchronous, X-Supporterstone, X-Supporte

Parchase Price: \$28,000 to \$68,000 Mandanance (Dr. site, Ramote dognostics, Resum to manufacturing facing. Average Mentionance Fee: \$325 Date First Installed: May 1962

C\$200C Small businets Word Leight: 16-bit Operating System: RDOS: AOS Languages Supported: Cobol. Forten: Basic, Basic plus Meximum Memory; 205K byrles Maximum Memory; 205 byrles Maximum Memory; 201 bytes

Assimum On-Line Storage: 1 4G yyes: Communications Protocols: Laynchronous: Synchronous: SULC SNA 25 Hasp Distribution: Find user: OEM feedor Safe's Terms: Purchase Asietterance: On-use; Planots

Nationalism: End user: OEM Fendor Sales Terres: Purchase Assistances: On-ass; Rancola lagnosiscs: Return to manufacture acity: Date First Installed: February 1960

ford Length: 16-bt persting System: MP-AOS lenguages Supported: Fortran, last.; Parcal instrum Memory: 125K bytes leaineam Memory: 512K bytes

Resimen Memory: 512K bytes Autiple Users: Yes, 16 Resimen On-Line Sterage: 200M bytes Communications Protocols: Isynchronous, 3270

Date First Installed: Jur DATA GENERAL COI ECUPSE 5/120

Operating Payshers, PDOS, AOS Languages Bapported Codo: Fortan Basic Result PLI. Languages Bapported Codo: Fortan Basic Result PLI. September 1997, Commission of the Codo Marines On Tune Sterager 1 GG bytes Communications Prolecola: Communications Prolecola: Communications Prolecola: COMMA 3780/2780 Distribution: End user Vendor Sales Termin. Plantase Vendor Sales Termin. Plantase Vendor Sales Termin. Plantase

Symmetric etion Protocols. Commitments. 25
Distribution. 125
Distribution. End user Vender Sales Terms: Purphas Laser
Perchase Price: \$16,000
Mantecencia: On-16,000
Mantecencia: On-1

ELLIPSE SHEW Word Length; 16-Dit Mord Length; 16-Dit Length; 16-Dit Length; 16-Dit Length; 16-Dit Length; 16-Dit More and Memory; 1200 bytes More and More a

Communications Protopolis Asynchronous, Synchronous, SOLC, CSAN, 258, 2780-2780 Distribution: End user Vereinds Sales Terms, Purchase Purchase Prices Forms, Purchase Purchase Prices Forms, 25, 200 Maintenance Cond. Remode diagnostics Average Maintenance Fee: \$100 Date First Installed, March 1960

DATA DEHERRAL COMP. ECLIPSE 5:250 to Word Cangle: 18-bit Operating Eyester: ACS RDOS Languages Supported Fortris. Basic RJ.1 Dick. RM-19-bit Operating Eyester: ACS RDOS Maximum Memory: 1M bytes Maximum Memory: 1M bytes Maximum On-Line Storage: 26 Convenience Profession Profession Studies Profession Studies Studies Profession Studies Studies

Communications Protected
Approximately Septemberger
SDLC/SWA, 278627140
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Word Longity: 15-co
Word Longity: 15-co
Word Longing System MP-MOS;
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Longuages Shaperied: Forton,
Base, Base; plan, Pascol PLI,
DOL, Agod
Massiman Memory; 250 Uprice
Mustiper Users: Ves. 32
Mustiper

SDLC/SNA, X 25 Distribution: End user, OEM Vender Sales Terres: Purchase, Royasi Mantenance: On-site Remote

Date First installed: February 195: BATA INSIDEA CORP. 532 Small business Word Langill: Stat Operating System: PCK

Materiam Review; 1 (M bytes Multiple Users: Yes, 14 Maximum Cir-Line Stronge: 70M bytes Maximum I/O Ports: 19 Commencetions Protocols: Asynchronous

Asynchronous
Purchase Prices \$20,000
Date Pirst Installed: September 1962
(See Vandor Profile Page V-7)
SECO DATAPOINT CORP.

6600 Sources S

Maintenance On-site
Date First Installed, July 1975
(See Venior Profile Page V-7)
BAYAPORIT COREP.
BAYAPORIT CORE.
BAYAP

Meaninum Memory: 250K Dyles Mousinum Memory: 150K Dyles Mo

BATAPOINT CORP. 5600 Small business Word Lungdi: 16-bit Operating System: RMS Languages Supporting: COCI. Chan. Distance Minimum Memory: 25th Cyles Machinum Memory: 15th Oyles Machinum Memory: 15th Oyles Machinum Service: 75th, 24 Maximum On-Line Storage: 1G bytes Communications Protocols: Asynchronous Synchronous, Beautherrors SEA C 2780-7780

Boynchronous SDLC 2780/3780 Distributions End user Vendor Sales Termis: Purchase; Fantal Lesse Purchase Price: 557,000 Maintenance; Chro. Average Mismirranice Fee: \$500 Date Pirst Installed: May 1381 Number Installed: May 1381 Number Installed: 100 —

ARAM CORP.

portating Byselen RSTS-E, WSXportating Byselen RSTS-E, WSXportating Byselen RSTS-E, WSXportating Burgersted (2004), privan Base Base (24.2 2 insurant Baseney, 256K bytes automate Memory, 266K bytes surroum Memory, 266K bytes surroum Memory, 40 bytes surroum Memory, 40 bytes (42.2 2004), and 40 byt

name Price: 54.355 hereance: Return to facturing facility First installed: 1981 Vandor Photie Page V-7)

M-23 Anv Word Langth: 16-bit Operating Systems: RSTS-E, RSX. ITM RSX-TIM + LMX Languages Supported: Cobol: Corrar, Basic, Basic pais. Basic pais

Alloinum Monoror, 15t bytes Macarem Monoror, 45t bytes Macarem Monoror, 45t bytes Macarem Col-Les Storage, 6004 bytes Macarems (D-Puste 2 Distribution, CSM Vender Salas Termer Purchase Pacchase Price: 50 400 Mayelmanace, 18thy Descriptoring (solity) Des First Healands (1982

BATAMAN CORP.
W.-20
Word Length: 16-bit
Opensing System: NSTSE PEX11M_LVAX
Lenguages Suspended Coxod.
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Vender Sales Torres: Purch Vender Sales Torres: Purch Purchase Price: \$12.750 Mointenance: Return to manufacturing facility Date First Installed: 1982 BATA TERMINISAL & COMMENSIONAL &

Word Length, 8 tot Operating System: CP1M Lengueges Supported: Foreign.	Detribution: CEM Vendor Sales Terres: Purchise Parchase Price: 56 125 to 520 000	Small business Word Length: 16-bit	PROFESSIONAL 350 Small business
Marine Memory 645 hutes	Assessed Manuages Fact 5000	Operating System: RSX-11M, RSX- 11M + RSYS/E CTS 500	Word Length: 16-bit Operating System: RSX-11M-
Maximum Memory: 64K bytas Multiple Usero: Yes 4	Data First Installed: Jiroury 3963 Number installed to Date: 50	Languages Supported: Cocol Fortran Basic plus. Basic plus 2, Coral Deci	Languages Supported: Basic
Masseum On-Line Storage: 2014 bytes	DIGIDYNE CORP.	Managem Memory: 512K bytes Managem Memory: 4M bytes	Mountain Memory: 256K bytes Maximum Memory: 512K byte Maximum On-Line Storage: 5
Maximum I/O Porte: 4 Communications Pretocols	S432 Mer	Multiple Users. Yes. 8 Meaweure On-Leve Storage: 4014	Maximum On-Line Storage: 5
Asynchronous Distribution: Third-party	Word Length: 16 bit Operating System: RDOS MICOS	Communications Protocols	Communications Protocols:
Vendor Sales Tenner Purchase Purchase Price: \$3,295 to \$9,995		Asynchronous, Synchronous Distribution, End user, OEM	
Maintenance: On-sile Average Maintenance Fee: \$120	Languages Supported Cobol Fortran Basic Pascal Biss Minimum Memory: 64K bytes	Purchase Price: \$21,000 Merrianance, On-use, Remote	Vandor Sales Terres: Airchas Purchase Price: \$4 375 Mentenance: On-sie
Average Maintenance Fee: \$120 Date First lestalled: 1981 Marker installed to Date: 2 000	Maximum Memory: Grit bytes Multiple Users: Yes. 2	diagnostics Average Maintenance Fee: \$245	Average Maintenance Fee: \$2
(See Vendor Profile Page V-7)	Maximum On-Line Storage: 320M bytes	DIGITAL EQUIPMENT CORP.	THE DECMATE II
DICOM, INC.	Mezotrum I/O Ports, 5	POP 11/24 Small business	
	Communications Protocols: Asynchronous		Word Length: 5:12-or Special Applications: WP, Microcomputing
Word Longth: 16-bit Operating System: RT11, RSX	Vendor Sales Terres, Purchase	Operating System: RT-11, RSTS/E. RSIL11M. CTS 300	
Operating System: RT11, RSX Languages Supported: Cotol, Fortax: Basic	Maintenance: On-see	Languages Supported: Basic plus, Coral Fortran Basic Cobo: Basic	
Maximum Memory: 65K bytes Maximum Memory: 512K bytes	Average Maintenance Fee: \$100 Date First Installed: October 1951	Moreous Mercery: 125K bytes Mexicum Mercery: 4M bytes	Languages Supported: OSOL Minumum Memory SCK bytes Measure Memory: 160K bytes Measure On-Line Storage: 6
Maximum Ondate Sterner 20064	Number installed to Date: 100		Meximum On-Line Storage: 61
Maximum NO Ports: 16	DIGIDYNE CORP.	Mesimum On-Line Storage: 968M bytes	Communications Prolocols: Asynchronous
Commissions Protective:	SAR4 May	Communications Protocols:	Distribution: Third-party Vendor Sales Terms: Purchase
Distribution: End user Yender Seles Yenns: Purchase Purchase Price: \$15,000			Purchase Price: \$3.000 Maintenance: On-urla
Purchase Price: \$15,000 Maintenasce: Return to	Operating System ROOS MICOS. BiTS	Vendor Sales Terras: Purchase. Perchase Price: \$32,000 Marchanance: On-site Remove	Date First Installed: January 15
	Languages Supported Color Forman Basic Fancal	degrostos Average Maintenance Fee: \$430	DIGITAL SYSTEMS CORP.
(See Vendor Profile Page V-8)	Languages Supported Color. Fortian Basic Fascal Minerare Memory: 125K bytes Maximum Memory: 125K bytes		Small business
DIGIDYNE CORP.	Maximum On-Line Storage: 220M	POP 11/44	Word Length: Scal Operating System: GALAXY Co.
\$200/11 Mary	Maximum I/O Ports: 15	Word Langth: 15-bit	Basic RPG PLII Assessed
Word Longity 16-bit Operating System RDOS MICOS	Communications Protocols: Attractronous	Operating System RSTSE CTS 500 RT11 RSX-11M	Manuscam Memory: 96K bytes Maximum Memory: 256K bytes
	Vendor Sales Terms: Purchase	Languages Supported: Copps. Fortran. Basic Basic plus. Basic plus	Maximum Memory 256K bytes Mutiple Users: Yes. 20 Maximum On-Line Storage: 1.1
Languages Supported Cobol. Forhan Basic Pascal Biss Cobol Minimum Memory: 128K bytes		2 Coral Miranum Memory: 256K bytes	Maximum I/O Forter 16
	Maintenance On-site Average Maintenance Fee: \$150	Manner Memory: 256K bytes Manner Memory: 4M bytes Mutiple Users: Yes. 40	Communications Protocols.
Maximum Co-Line Storage: 320M	Date First Installed: October 1961 Number Installed to Date: 500 —	Maximum On-Line Storage: 3 6G bytes	Distribution: End user Vender Sales Tarres: Purchase
Maximum I/O Ports: 15 Communications Protocols			Purchase Price: \$28,000 to \$90 Mentenance: Ch-one
Asynchronous	MICRO POPI1	Asynchronous Synchronous Distribution: End user, OEM Vendor Seine Terrain Distribution	Average Maintenance Fee: \$41 Date First Installed: January 19 (See Vancor Profile Page V-8)
Asynchronous Distribution: OEM Vandor Seles Yerns: Purchase	Small business Word Langth: 16-bit	Vendor Sales Terma Purchase Purchase Prior: \$55.000 Maintenance: On-ste Remote	(See Vancor Prote Page V-8)
Maintenance: On-site	Operating System RY11, OSM 11,		GALAXY/S
Parthese Price \$7 223 to \$50,000 Maintenance On-ste Average Harrisrance Fee: \$300 Date Frest Installed March 1960 (See Vendor Profile Page V-5)	Languages Supported Cotol: ForVan Besc Basc plus Besc plus	Average Maintenance Fee: \$260 Date First Installed: 1980	
	2 APL Coral Manmum Memory: 256K bytes	PROFESSIONAL 325	Word Longth: Bot Operating System: GALAXY OS Languages Bupported: Cobol Basic: PL/1 Assenter
SIGNOVNE CORP.	Meastern Memory: 414 bytes Multiple Users: Yes 6	Small business Word Length: 16-bit	Basic PL1 Assertee
Men Word Langety 15 had	Meanman On-Line Storage: 20M bytes	Operating System: RSX-11M - Languages Supported Basic Basic	Madunia Users: Yes 25.
Word Length: 16-bit Operating System: RDOS, MICOS, BITS	Communications Protocols: Asynchronous Synchronous		Masswam On-Line Storage: 2 4
	Distribution: End user OEM Vendor Sales Torres: Purchase -	Monteuth Marrory: 250K byles Maximum Memory: 512K byles Maximum On-Line Blompor: 800K	Maximum IrO Perts: 60 Communications Protection Asynchronous
Fortran Basic Pascal Sissa Minimum Nemory: 128x bytes Maximum Memory: 512X bytes		bytes	Asynchronous Distribution: End user Vendor Sales Terms: Purchase
Multiple Users: Yes: 5 Meastrum On-Line Storage: 240M	Maintenance: On-site. Remote degrostics	Communications Protocols:	Vendor Sales Terms, Purchase Purchase Price: \$40,000 to \$125,000
	Average Maintenance Fee: \$100 (See Ventor Fronte Page V-d)	Vendor Sales Terres Purchase	\$125,000 Maintenance: On-site
Maximum I/O Ports: 8		Purphase Price: \$3,375	Maintenance: On-site Average Maintenance Fee: \$78

DISPLAY DATA CORP. INSIGHT 80 Small business	Date First Installed: December 1980 Number Installed to Date: 50 — 100	Languages Supported: Cobol Fortran Basic Pascal C Minimum Memory: 256K bytes	Muniple Users No Maximum On Line bytes
Word Length: 8-b1		Masserum Memory: 15f bytes	Maximum I/O Ports
Operating System: INSIGHT Languages Supported Insight	SAME	Mutople Users Yes 16 Maximum On-Line Storage: 76M	Communications P
	Small business	bytes	Asynchronous Syn
Meanner Morrory: 128K bytes	Word Length: 16-bit	Massessen & O Ports: 19	Destribution Tring (Vendor Sales Ferm
		Communications Protocols:	
Maximum On-Line Storage, 4048	Languages Supported Fortran	Asynchronous Bisynchronous	Mointenance On-s Average Maintena Date First Installed
Measure I/O Ports: 16	Basic Pascel Lisp	Distribution: OEM	Average Maintena
Ostribution: End user	Minimum Memory: 128K bytes Measurum Memory: 1M bytes	Vendor Sales Tarms: Purchase Purchase Price: \$10,995	Number Installed to
Vendor Sales Terms: Purchase			(See Vendor Protein
Vendor Sales Terms: Purchase Purchase Price: \$45,000 to	Masseum De-Line Storage: 360M	diagnostics. Return to manufacturing	
\$120,000	byses		ETR STAR SYST
Maintenance: On-site Date First installed January 1974	Masimum I/O Ports: 24 Communications Protocols:	Date First Installed: September 1982	STAR-SYSTEM 2
Number installed to Date 1 000	Asynchronous	Humber Installed to Date 500	Word Length 8-on
5 000	Destribution: Torre curty	1,000	Operating System
(See Viridor Profile Page V-8)		(See Worder Profile Page V-91	Letterages Suppor
	Purchase Price: \$16 000 to \$60,000		Movemen Memory:
DISPLAY DATA CORP.	Maintenance On-site Return to	DYNARYTE MONARCH 8900	
Small business	manufacturing facility	Small business	Manager Users. No Manager On-Line
	Average Maintenance Fee: \$280 Date First Installed, November 1982	Word Length: 8.16-bit	bytes
	(See Wender Profes Page V-8)	Operating System: CPM: MPM 86	
		Operating System: CPM: MP/M 86 OASIS UNIX	
Merenum Memory: 64K bytes	DURANGO SYSTEMS, INC.	Languages Supported: Cobol Fortran Basic Pascal Pt. 1	Asynchronous Syrv
Maximum Memory: 125K bytes Multiple Users: Yes: 18	POPPY Smell business	Fortran Basic Pascal PL 1	Distribution: Third of Vendor Sales Term
Maserum Der Line Storage: 120M	Word Langue: 16-bit	Mourous Memory, 256K bytes Maximum Nemory: 1M bytes	Purchase Price: \$7
0466	Operating System: MS-DOS, CPM 66, MP M 60	Multiple Users, Yes, 16	Mentenance On s
Massman I/O Ports: 24	56 MP M 56	Multiple Users: Yes: 16 Maximum On-Line Storage: 76M	Martenance On s Average Martenan
	Languages Supported: Colodi	bytes	
Vendor Sales Terres: Purchase Purshase Prec, \$45,000 to	Basic Pascal Pt./1 Montum Memory: 125K bytes	Maximum I/O Ports: 19	Number installed to
\$120,000	Maximum Memory: 640K bytes	Communications Protectis: Asynchronous Bisynchronous	1,000
Mantenance: On see	Bulliple Users: Yes 4	Destribution: OEM	FOUR-PHASE SY
Date First Installed: May 1982		Vendor Sales Terres: Purchase Purchase Price: \$9,000 to \$14,000	SYSTEM IV 40
	Maximum I/O Ports: 9	Purchase Price: \$9 000 to \$14 000	Mes
B S N MICRO PRODUCTS, INC.	Maximum I/O Ports: 9 Communications Protocols.	Mauritenance On-use Remote depressors Return to manufacturing	Ward Length: 24 to
	Asyrchronous Synctronous	facility DEM	Languages Suppor
Word Length 6-bit Operating System DOS:65 Languages Supported: Black.	Boynetronous SOLC SOLCISMA	Date First Installed: Secretary	Languages Suppor Assembler, Vocon Minimum Memory Maximum Memory
Operating System DOS/65	Distribution End user OEM Third-	1962	Haussun Memory
Languages Supported: Black.	purty		
Assertoly Manuscan Memory: 48K bytes,	Vendor Sales Terms: Purchase Punchase Price: \$5,000 to \$9,000	1,000	Maximum On-Line
Maximum Nemory: 200K bytes	Martenance: On site Remote	ELITE CORP.	Construenceisons P
	degresses Return to manufacturing	CONSULTANT	Asynchronous Syru
Maximum On-Line Storage: 74M		Small business	
byles	(See Vandor Profile Page V-8)	Specific Application, CAD/CAM, Software Development	Oretrhysien: End us Vendor Sales Terre
Maximum I/O Ports: 7 Communications Protocols:	DURANGO SYSTEMS, INC.	Software Development	Vendor Sales Terro
Asyrcfronous	POPPY II	Word Langth: 32-bit	Purchase Pricer Sti
Dreinbulson: End uner, OEM Third-	Small business	Operating System: PSS Languages Supported Basic Pascal ShaffL, Lusp Managem Memory: 512K bytes Managem Memory: 1844 bytes	Maintenance On a
party	Word Length: 16-bt	Pascel SMPL Lap	Average Maintenar
Vandor Sales Terms: Purchase	Operating System ZENIX MS- DOG CPM 56 MPM 66	Morement Memory: 512K bytes	(See Vendor Profile
Purchase Price: \$2,995 to \$10,000	DOS CPIM BE MPIM BE	Maximum Memory: 16M bytes	
Maintenance, On-site Third-party Data First Installed: June 1962	Languages Supported Cobol Basic Parcai C	Maserone De-Less Storage: 100M	FOUR-PHASE ST SYSTEM IV/50
Number Installed to Date: 50	Mormon Marrory 1649 hours	Intel®	Marie Marie 19750
	Minimum Memory: 364K bytes Masurum Memory: 1 1M bytes	Massesure I/O Ports: 18	Word Length: 24 or
(See Vendor Profile Page V-8)		Communications Protocols:	Languages Support Assertion Ventor
D S N NICRO PRODUCTS, INC.			Assembler Veron
DAN MICRO PRODUCTS, INC.	Manifest I/O Ports: 15	Chesnibusion, Third party Vendor Sales Yenns, Purchase	Minimum Mewory
Small business		Laste	Manner Memory Manner Memory Multiple Users You Manner On-Line 1
Word Length 6-bit			Massey On-Lone 1
		Maintenance On site Return to manufacturing facility	
Languages Supported: Cobol Fornan Basic Pascal APL Forth	Detribution: End user OEM Third-	manufacturing facety	
Fortan Basic Pascal APL Forth	Vendor Sales Terms: Purchase	Date First Installed: March 1983 Number Installed to Date: Loss than	Asynchronous Sync
Minutum Memory: 45K bytes Meximum Memory: 75QK bytes Multiple Users: No		TO THE RESIDENCE OF CHILD IN	Bisynchronous Hasi Distribution End un Vendor Sales Term
Multiple Users: No	Maintenance: On-site Plemote	(See Vendor Profer Page V-9)	Vendor Sales Terri
Maximum On-Line Storage: 20M	Maintenance: On-site Remote Degrostos Return to manufecturing		

nchronous, SDLC, Hasp	Vendor Sales Terms: Purchase	Multiple Users: Yes. 96	Small business
ribution: End user	Purchase Price: \$5,000	Maximum On-Line Stocage: 38 4G	Word Length: 8-bt
dor Sales Terros: Purphase.	Maintenance: Third-party		
	Average Maintenance Fee: \$450	Maximum I/O Ports: 122	Operating System CPM MPM Languages Supported Cobol Forman Basic Pascal PUT, C
hase Price: \$110,000	Date First Installed: July 1976	Communications Protocols:	
Menance On-site		Asynchronous, Synchronous	Minimum Memory: 64K bytes
race Maintenance Fee: \$545	Sen	Distribution: OEM	Masseum Mawary: 256K bytes
	(See Vendor Profile Page V-10)	Vendor Sales Terms: Purchase	
PHASE SYSTEMS, INC.			Multiple Users: Yes; 6
		Lease	Meximum On-Line Storage: 50M
TEM IV:45	GENERAL ROBOTICS CORP.	Purchase Price: \$100,000 to	bytes
	PEGASUS	\$150,000	Maximum I/O Ports: 7
d Length: 24-bit	Mor	Average Maintenance Fee: \$1,000 Date First Installed: 1975	Communications Protocols:
avages Supported: Cobol.	Word Leneth: 16-bit		Asynchronous, Beynchronous: -
	Operating System: RSX-11-RT-11	(See Vendor Profee Page V-10)	SOLC HOLC
mum Memory: 286K Dyons			Distribution: OEM .
mum Memory: 766K bytes	Languages Supported Cotol	GOULD, INC.	Vendor Sales Terms: Purchase
gie Users: Yes	Fortran Basic APL Diboi		
		3247	Purchase Price: \$1 500 to \$5 000
irrum On-Line Storage: 821/	Minimum Memory: 64K bytes	Mn	Membersance: Third-party
	Meximum Memory: 414 bytes	Word Length: 32-oil	Date First Installect: January 1963
revolutions Protocols:	Multiple Users: Yes, 32	Operating System: LINEX; MPX32	
ictronous, Synctronous,	Maximum On-Line Storage: 95M	Languages Supported: Cobol. Fortran, Basic, Pascal. C	(See Vendor Profile Page V-10)
schronous, SOLC: 2780/3780,			
	Communications Protocols.	Minimum Memory: 256K bytes	HARRIS CORP.
Stution: End uper	Attendronous Synchronous	Maximum Memory: 16M bytes	9015
for Seles Terres: Purchase.	Distribution: OEM	Multiple Georg: Yes, 95	Small business
	Vendor Sales Terms, Purchase		
hase Price: \$130,000		Maximum On-Line Storage: 38 43	Word Length: 16-bit
denance: On-ste	Purchase Price: \$10,000	Meximum I/O Petts: 122-	Operating System: CP14 85, MS-
	Meintenance: Third-party		008
age Maintenance Fee: \$560	Average Maintenance Pee: \$450		Languages Supported: Coppl.
		Asynchronous, Synchronous	Besc
R-PHASE SYSTEMS, IHC.	Number Installed to Date: 100 -	Distribution; OEM ·	Minimum Memory: 512K Sytes
TEM IV/70		Vendor Sales Terms: Purchase	Meaiman Momeny: 512K bytes
		Purchase Price: \$200,000 to	Maximum On-Line Storage: 20M
Length: 24-bit	GERERAL ROBOTICS CORP.	\$130,000	
pages Supported: Cobol	SCORPIO	Meintenance On site	Communications Processes
PTOINT VISION	Street business		
		Average Maintenance Fee: \$1,000	Asynchronous
mum Memory: 45K bytes .	Word Langth: 16-bit	Date First Installed: 1980	Distribution: End user Vendor Sales Terms. Purchase
trum Memory: SSK bytes igio Users: Yes	Operating System: RSX-11, RT-11,		
	RSTS.E. LINK	GOVER, INC.	
Inum On-Line Storage: 323M	Languages Supported: Cobol: Fortran, Basic, APL, Deol	328790	Maintenasce: On-sta
			(See Vendor Profile Page V-10)
municationa Protocola:	Minimum Memory: 64K bytes	Word Length: 12-bit	
ofronous, Synchronous,	Maximum Memory: 4M bytes	Operating System UNIX, NFX32	HARRIS CORP.
ofverous, Heap	Multiple Users: Yes: 15		9620
Stylen: End uper	Communications Protocols:	Larguages Supported: Cottol. Fortran, Basic, Pascal, C	
for Seles Terres: Purchase			Small business
	Asynchronous, Synchronous		Word Length: 15-int
	Distribution: OEM	Minimum Messery: 256K bytes Meaimum Memory: 166f bytes	
Name Price: \$150,000	Vendor Sales Terms: Purchase Purchase Price: \$7,000		DOS
flemance: On-site		Meximum On-Line Storage: 38 4G	Languages Supported: Cobol
mge Maistenance Fee: \$720	Maintenance: Third-party		Basic
	Average Maintenance Fee: \$450	Maximum I/O Ports: 122	Minimum Memory: 512K bytes
WERAL AUTOMATION, INC.	Date First installed: July 1961	Communications Protocols: None:	Masimum Memory: 1M bytes
RA 5000	Number installed to Date: 100 -	Synthetical	Multiple Uppers: Yes, 4
	500	Distribution OFM	
Longth: 16/32-bit			Maximum On-Line Storage: 18M
		Vander Sales Terms: Purchase.	Communications Protectle:
rating System: XENIX pages Supported Coppl	GENERAL ROBOTICS CORP.	Lease	
	TRISTAR SERIES	Purchase Price: \$330,000 to	
an Sesic Pascel C	Small buoness	\$360,000	
		Average Maintenance Fee: \$2,640 Date First Hessiled: 1980	Asynchronous Braynchronous Distribution: End user Vender Sales Terms: Purchase
			Purchase Price: \$27,250
mum Memory: 1 SM bytes ple Users: Yes, 16 man On-Line Storage: 632M	Word Langth: 16-bit Operating System: RSX-11, RT-11, RNTS/6: TSX		Maintenance: On-oits
		GRID SYSTEMS CORP.	
THUR L'O Porte: 15	Languages Bupperted: Cobol. Fortran: Basic, AFL, Dool	COMPARS	HARTRONIX, SHC.
munications Protocols:	Minimum Moreory: 64K bytes	Mo	4532
chronous	promises meanth. Ory plans	Man	4932
	Maximum Memory: 414 bytes	more Langert 19-01	Min
Rution: End user	Multiple Users: Yes, 16	Word Longth: 16-bit . Operating System: CCOS Languages Supported: Fortrar; Basic, Pascal, C. PLM	Languages Supported: Sauc: Forth, Assembler
for Sales Terres: Purchase	Communications Protocols:	Languages Supported: Fortran;	Forth, Assembler
hase Price: \$57,000 to	Asynchronous, Synchronous Distribution: OEM	Basic Pascal C PLM	Minimum Memory: 128K bytes Meximum Memory: 24M bytes
000	Distribution: OEW		Maximum Memory: 2414 bytes
Vendor Profile Page V-101	Vendor Sales Terms, Purchase	Masimum Memory: 256K bytes	Multiple Upors: Yes, 116

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Date First Installed: 1978
busher Installed: 1978
busher Installed to Date: 50
See Vendor Profes Page V-10)
45 WERTT-PACKARD CO.
47 125 SERRES
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anguages Supported: Sanc.
Septial Date: Cengit: Date
Septial Deterring Spatian; CPIM

inguages Specied Basic, inguages Specied Basic, includ Agic Lig. incharant Memory: 64K bytes assisses Memory: 64K bytes utilipie Users: 10 bytes; 2 Millians incharant services of the incharant services of the incharant services of the incharant services of the incharant services of incharant services incharan

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IP 250 SIGNES
irruit business
ford Length: 16-bit
ford Length: 16-bit
persing System: BOS
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feritum Remay; 504 bytes
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Communications Protectis: Laynchronous Synchronous heritobrone: End user render Sales Terms: Purchase, nide unihase Price: \$20,000 Santenance: On site lawnessee: On site lawnessee: See \$20,000 Santenance: Price: \$20 lawnessee: See \$20 lawnes

Communications Protocols: Asymptomous, Synchronous, Baynchronous, Baynchronous, Distribution: End usar Vender Satio, Termic, Purchase Punchase Price, 837,000 to 586,000 Mainteannou. On-91s. Average Mannengace Fee; 5500 Date First Installed: 1979 Mamble: Installed: 1979 Mamble: Installed: 1979 500

HEWLETT-PACKARE CO.
P 1000A SERIES
for
Novel Length: 16-bit
Joersting System: RTE
anguages Supported: Fortran,
Note: Packar
Novel Length: 128K bytes
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la semant Momony: 148 bytes
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animum On-Line Storage: 540th fee animum in O Ports: 13 membancarions Protocolis: synchronous, Synchronous synchronous, Synchronous membance: Facility of Purchase michaele Pros. \$12,000 to \$22,000 externance: For 560 her Part Installed; 1982.

invalue CV-sts ope Maintenance Fee: 560 First Installed: 1982 ILETT-PACKARD CO. 1000E SERIES I Length: 16-bt

or ord Langth: 15-bit persists System: RTE
nipulages Experient: Fortun,
sice, Places
servers Memory, 26K bytes
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Average Marelenance Fee: \$150 Dole Prot Installed: 1975 HEWLET-PACKARD GO. HP 1000F SERIES Mort Length: 16-bit Operating System: RTE Languages Supported: Fortran, Balox, Facial Security Marelenance St. Doles Marelenance St. Doles Marelenance St. Doles

Maximum Memory: 20. bytes Multiple Memory: Yes. 8 Maximum On-Line Sterage: 1 9G bytes Commissional Synchronous Desthalate: End user Yender Sales Tensus, Purchase Price: 815 000 to 532 000 Maximum Collection (Collection Collection C

DISS FOR WISHINGT BY STATES ON THE STATES ON THE STATES ON THE STATES OF THE STATES OF

Multiple Users: Yes, 4 Assumed De-Lime Starrage: 540M yes desirant NO Parts: 13 commenciations Protocols: synchrynous, Synchrynous feerthalder: End user render false: Terrae Purchane render false: Terrae Purchane render false: On-the laminous Price: \$8,000 to \$17,000 families of the laminous Parts \$8,000 to \$17,000 families of the laminous per laminous la

BWLETT-PACKARD CO.
P 1000M BENIES
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Freed Length: 16-bit
pending System: RTE
Impuspes Supported: Fortran,
ass., Pascal
Internal Merency: B4K Dynas
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Accessed: Mar

Multiple Upons: Yes. 8 Massimum On-Line Storage: 1: bytes Communications Protocols: Asynchronous, Synchronous Developing: Tod. upon

Marietanace Courte
Date First Installed: 1875
HETMLETT-PACKARD CO.
HE 3000 H
More
Word Length: 15-bit
Opening System: MYZ.
Companyor Supportant: Coold
Bermann Merchy; 2000, bytes
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Average Maretenance Feet 2070 Date Fred Venderlie June 1973 HERMIZTY-PACKARIO CO. HP 2000 ERRING OC. HP 2000 ERRING MYC. Operating Systems: MYC. Company Systems: MYC. Control Seaso, Spotta FYC. System Maximum Merceny; 28th Cytes Maximum Merceny; 28th Cyt

Asynchronius SILC, SOLCSM/ X25, X21 Distribution: End uper Verder Seles Terms: Purchase. Lenne Purchase Price: \$85,000 Maintenance: On-site Average Maintenance Fee: \$600 Date First Installed; November 15

Date First Installed November 19
Network III - Activate Go.
19-2000 Service 460X
November 19-2000 Service Mrt.
November 19-2000 Service Mrt.
Lenguise 16-20
Derevising Springer Mrt.
Lenguise Supported Codel
Forum Date, Plazeal Mrt. Str.
Misseume Manner; 25th Cytes
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Develuation: End user
Vendor Bales Tyres; Purchase.
Purchase Prince: S0 200
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Anneae Maintenance Parc: S20
Dete Print Institute: Parc. Nat.
Parc S0 200
Maintenance: On-sie
Anneae Maintenance Parc: S20
Dete Print Institute: Factury: 13
METALETT-ADMARS G0.
IPT 2000 SERIES 41
Mon
Word Langet: IS-20
Operating System: MPE
Operating System: MPE

Languages Supported: Cobol. Fortram, Basic: RPG Minmans Mendany: IM bytes Menterum Memory: 6M bytes Municipe Users, Ym. 35 Managem Deal Ing Sternage 6 4G

Maintenance: On-see
Dese First Eventhock: 1901

REWLETT-PACK.AND.CO.

MODEL 5 MICROSYSTEM

Mod. Length: 16-bc

Deserting Systems. RTE

Imaginages Supported: Fortran,

Seric, Pascal

Remaint Marriery: 5HC bytes

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splet Users, Yes, 3
minus Christian Stranger: 200M
minus Chris

Simil fourness
West Langit: 16-bit
Operating System: GCOS
Languages Supported: CoCoI
Languages Supported: 250K bytes
Macrosom Supported: 18 bytes
Macrosom Supported: 18 bytes
Macrosom Supported: 19 bytes
Macrosom Supported: 12
Demonstrations Profuscio
Languages Supported: 12
Langua

Deletholers: End user: Purchase, Leade: Selbert Terms. Purchase, Leade: Purchase Price: \$26,000 to \$35.0 Membraneous: On-ole Average Reinformence Face \$175 (See Vendor Profile Page V-17) HOMETWELL, MIC. 8:24 Small business Weet Length: 16-bit Weet Length: 16-bit

Micel Length: 16-bit Speciality Systems GODS Lenguages Supported: Cobol lowers, Sales Lenguages Supported: Cobol lowers, Sales Lenguages Supported: 10 Micel Lenguages Lenguages Supported: 10 Micel Lenguages Lenguages Supported: 10 Micel Lenguages Lenguages Lenguages Lenguages Septimization Proteoples Lenguages Lenguages Lenguages Septimization: Drd Lenguages Septimization: Drd Lenguages Septimization: Drd Lenguages Septimization: Lenguages Septimization Septimization Lenguages Septimization Lenguages Septimization Septimization Lenguages Septimization Septimization

HONEYWELL, INC.	Average Maintenance Fee: \$320 Data First installed: 1981	Yendor Sales Terms: Purchase Purchase Price: \$30,000	Distribution End user Thirtigal Vendor Sales Tarms, Purchase
Word Length: 16-bit	HONEYWELL INC.	Maintenance On-site Date First Installed: August 1979	Rental Lease Purchase Price: \$19 000
Operating System. GCOS	6.76	Date First Instance August 1979	Maintenance: On-ste
Languagea Supported Cobol	Mrs	PDM	Date Sept Installed Month 1986
Fortan Basic	Word Length, 15 bt	SCRES/1	Date First Installed Murch 196 Number installed to Date: 1 00 (See Vendor Profile Fage V-11)
	Operating System GCGS	Men	(See Verying Shobin Flage V. 11)
Macmum Memory: 1M bytes	Languages Supported: Cobol	Word Length: 16-bit	
	Fortran Basic	Operating System RPS EDX CPS Languages Supported Cobol Fortish Dissic PU1	ICL, INC.
Maximum On-Line Storage 10	Minimum Memory 512K bytes	Languages Supported Cobol	
bytes	Maximum Memory: 2M bytes	Fortran Basic PU1	Small business
Distribution Enduser	Maximum On-Line Storage 1G.	Maximum Memory: 512K bytes	Operating System: DMF3
Yender Sales Terms: Purchise	bytes	Multiple Users: Yes 32	Languages Supported: Cotol
Lease	Maximum I/D Ports: 82	Communications Protocols: SDLC	
Purchase Price: \$26 000	Communications Protocols	SDLCISNA -	Minorum Mercery: 60K bytes
Maintenance On-site Average Maintenance Fee: \$130	Asynchronous	Yendor Sales Terms. Purchism	Maximum Mersory: 12M bytes
Date First Installed, 1961	Vender Sales Terms Purchase		Multiple Users: Yes. 20
Date Pest Installed, 1961	Vender Sales Terms Purchine	Purchase Price: \$30,000 " Mantenance: On-site	Maximum On-Line Storage, 1 1
HOMEYWELL, MC.	Pyrchese Price: \$75 000	Date Pirst Installed November 1976	Mapmam I/O Ports: 20
A SA	Mentenanca On situ	Number Installed to Date: 10 000	Communications Protocols
Mo	Average Maintenance Fee: \$350	- 50.000	Asynchronous, Synchronous,
Word Length 16-brt	Date Past Installed: 1981	- 50 000	Bisynchronous SDLC HDLC
Oneustron Sustain: OCCCS	Dete Feat Heatman, 1901	resi	Deteloring Endurer
Operating Systems GCOS Languages Supported Cobol Fortian Basic	HONEYWELL, INC.	SYSTEM 34	Vendor Sales Terms: Purchase
Forman Basic	DPS 5/31	Small business	
Minimum Memory 256K bytes Maximum Memory: 1M bytes	Small business	Word Length Stat	Purchase Price: \$80,000
Maximum Nemocy, 1M bytes			
	Operating System OCOS Languages Supported Cobol	Languages Supported Cobol Forman Basic RPG Meimum Memory 32K bytes Maserum Memory: 256K bytes	Date First Installed: Junuary 19 Number Installed to Date: 500
Maximum On-Line Storage 1G	Languages Supported Cobol	Fortran, Basic RPG	Number Installed to Date: 500
bytes		Minimum Memory: 32K bytes	1 000
Maximum I/O Ports: 45	Minimum Memory: 256K bytes	Masurum Memory: 256K bytes	
Communications Protocols	Hazerson Moreory 1M bytes		INDEPENDENT BUSINEES
Asynchronous	Multiple Users: Yes 10	Maumum On-Line Storage: 256K -	SETA SYSTEM 2
Distribution: End user	Maximum On-Line Storage: 26M	bytes	BETA SYSTEM 2
Yendor Sales Terma Purchase	bytes	Construncations Protocols	Small business
Purchase Price: \$32 000	Maximum I/O Ports 16	Bayrictronous, SDLC/SNA	Word Length 5-bit
Purchase Price: \$37,000	Communications Protocols: Asynchronous	Distribution End user Yendor Sales Terms, Purchase	Operating System IBS-PNET
Average Maintenance Fee: \$150 Date First installed: 1981	Distributors Enduser	Purchase Price: \$60,000	Languages Supported Poscal
Date PVIII Milianes, 1981	Vandor Sales Terms: Purchase	Maintenance: On Ste	Material Memory: 64K bytes
HONEYWELL, INC.	Leane	Date Contracted Consultry 6577	Maximum Hemory: 1tl bytes
6:34	Purshase Price: \$20,000 to \$30,000	Date First Installed December 1977 Number Installed to Date: 50 000 100 000	Multiple Users. Yes, 16
Mrs	Mantenance: Co. con	- 100,000	Meximum On-Line Storage, 1 1
	Assertes Mantanance Eng. 5175	- 111 000	bytes
Operating System: GCOS Languages Supported: Cobs Fortion Basic	Mantenasca: On-site Average Mentenance Fee: \$175 Date First Installed: Minch 1962	1994	
Languages Supported: Cotol		SYSTEM 36	Communications Protocols
Fortran Basic	IDM	Small business	Communications Protocols: Asynchronous Synchronous Distribution: DEM Yendor Sales Terres: Purchise
Moreum Memory: 256K bytes	6130	Word Longth: 15-bit	Distributions: DEM
Massesser Merrory: 2M bytes Massesser On-Lane Storage: 1G	Mex	Larquages Supported: Cotol Fortun Basic RPG. Assembler Misimum Memory: 128K bytes Maximum Hemory: 512K bytes	Yendor Sales Terres: Purchise
Maximum On-Late Storage: 1G	Word Length: 16-bit	Fortran Basic RPG. Assembler	
Maximum &O Ports: 54	Operating System DPCX	Misimum Memory: 126K bytes	Purchase Price: \$5 250 to \$16!
Communications Protocols	Languages Supported Cotol	Maximum Memory: 512K bytes	Maintenance: On site IASCO Average Maintenance Fee: \$60
Asynchronous	Fortran	Marriage Users: Yes 30	Average Mauflerance Fee: 300
Asyncyorous Detectors Fordamen	Minimum Memory: 256K bytes Measurem Memory 1M bytes	Maximum On-Line Storage: 40014	Date First Installed, November 1 Number Installed to Date: 200 (See Vendor Profer Page V.11)
Vendor Sales Terms Purchase	Multiple Users Yes	Communications Protocols	NUMBER INSTANCE OF DESIGN 200
	Maximum On-Line Storage: 63564	Bayreneneus SDLCGNA -	(Sea season value cake s(11)
Purchase Price, \$39 000 Maintenance: On-sta	byers	Datels Geer Endurer	MOTE NO.
Maintenancer Oniste		Detribution End user Vendor Sales Terms: Purchase Rental Lease	INDEP, INC.
Average Maintenance Fee: \$160 Date First installed: 1961	SDLC/SNA	Revital Lease	Small business
Date First Installed: 1981	Distribution: End user		Word Langth: 8-51
		\$100,000	Operating System CP:M
HOMEYWELL, INC.		Mantenance: On site Average Maintenance Fee: \$200 Date First Installed: July 1563	Languages Supported Cobol Fortran, Basic Pascal, PL-1. C
6/74	Maintenance: On-site	Average Maintenance Fee: \$200	Fortran, Basic Pascal, Pt. 1. C
Mrs	(See Vendor Prote Page V-11)	Date First tretailed: July 1963	Minmum Memory: 64K bytes
Word Langth: 15-bit Operating System GCOS	(See Vendor Proble Page V-11)	The state of the s	Minimum Menergy: 64K bytes Maximum Menergy: 64K bytes Multiple Users: No Meximum On-Line Storage: 40K
Operating System GCOS	mw.	ICL, INC.	Multiple Users NO
Languages Supported: Cotol Fortan Besic	2100	Small business	Merania Carries Spessible atte
Margare Manage 6150 Index	Mo	Sitted Dusiness	byles
Maximum Mamoor 214 hytes	Ward Langth: 15-bd	Word Length: 6-bit	Yearter Sales Tarms: Durchara
Minimum Memory: 512K bytes Maximum Memory: 2M bytes Multiple Users: Yes 40	- Word Langth: 16-bit . Operating System DPCX	Operating System: DRX Languages Supported: Cotol. Basic Pascal	bytes Destination: End user Yender Sales: Terms: Purchase Purchese Price: \$9.500 to \$11: Membrance: On-sie Average Maintenance Fer: \$80 Date Five Installed: February II Number Installed to Date: Less.
Maximum On-Line Storage: 1G	Languages Supported: Cobox.	Carguages supported: Cotol.	Majaragaray Charte
		Moreum Memory: 160K bytes	Assessed Maintenance Con Chi
Massrore & O Ports, 54	Minmum Manager 9569 today	Maximum Hemory: 7M byles	Cate Sout Josephor Cate or 1
	Minimum Mereory: 256K bytes . Maximum Memory: 156 bytes .	Multiple Linery Yes 16	Number installed to Date: Less
Asynchronous		Multiple Users: Yes 16 Maximum On-Line Storage: 61M	
Distribution: End user	Maximum On-Line Storage: 639M		(See Vendor Profile Page V-11)
Yender Sales Terms: Purchase		Maximum I/O Ports: 64 -	
Lease Done 645 000	Communications Protocols:	Conversessors Presectle.	INDEP, INC.

n On Line Storage: 320M n I/O Porte: 35 on: End user lates Terms: Purchase o Price: 512 485 to 523 560 incer: On-size Maintenance Fee: \$100 a installed: February 1982 installed to Date: 10 – 50 installed to Date: 10 – 50

Ale Application: Data Entry Stangth: 8-bif sting System: NATIVE was Memory: 24% Dyles man Memory: 45% Dyles get Users: Yes, 16 was On-Line Storage: 2%

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Vendor Profile Page V-11)

Acation Data Entry i 8-bit patient NATIVE

Purchase Price: \$27,650 to \$76,850 Maintenance. On site Average Maintenance Fee: \$575 Date Farst Installed: \$975 Number Standard 1977

bytes
Measman 1/0 Perix: 3
Commerceations Problems
Symptomous Significations
Distribution End User
Vendos Safets Terms: Purchase
Rectal, Leade
Purchase Priving 542 000 to \$10,000
Maintenance (On-set of the Safets)
Average Machinesee Feet \$760
Data Frail Installed \$755
Marcher Installed to Date: 100 —

es Protocols: Synctronous SDLC X 25 HOLD

"If the auto industry had done what the computer industry has done in the last 30 years, a Rolls-Royce would cost \$2.50 and get 2,000,000 miles per gallon."



Computers aren't just an industry they're a revolution in the way mankind operates. And no one covers this revolution better than we do!

We are CW Communications/Inc. and despite our youth (only 15 years) we're the world's largest publisher of newspapers and magazines for communic morels all these the

world.

More of our publicanons are weelly freropapers, because on many things largene so rapidly in the computer baseness (as the baselians quare from a premanent form of the property of th

But as subdirestable at the Jacob Dynamic Security Securi

This extraordinary increase in efficiency has led to a rapid expansion in computer use, as human ingenuity finds more and more applications for these powerful rools. So the

and more applications for these powerful rook. So the master for computer products and services has turned our to be more elastic than most observers had thought. Worldwide expenditures are currently at 900 Billion, and arowing by 20% a year.

A constant flow of new preducing apple changes in technology; more and more new applications, and large and growing expendences. It's an industry with a strong need for current, complete-and accurate information. Which

Our oldest publication is COMPUTERWORLD a weekly newspaper with a growing all-paid circulation in excess of 120,000 (quote an increase from our modest 7,500 in 1967).

COMPUTERWORLD serves America's computer usen with the consumer-creened, objective information they need. And it has become America's top historia (peafessional publication, measured by advections revenue

80 WORLD is our semi-monthly publication for retailers, dealers, distributors and other independent sales person, distributors and other indep organizations (ISOs) in the resellers marketylace. This is a relatively form

manacepiace. This is a relatively it marketplace which has grown up-around the minicomparer and misicomputer, and which shows every upo of very rapid growth fo-lease the next decade.

The latest phenomenon of the co-industry is personal and desk-ton

computers and we're covering it with our newest publication. INFOWORLD and PC WORLD INFOWORLD is a weekly

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We are publishers of newspapers and magazines in the following markets: Auteralism, West Gerhany, United Kingdom, The People's Republic of China, Japan, Braoj, Mossco, France, Spain and Denmark.

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Computing is an exciting industry, with a unique need for information. And the publications we produce provide the information on easily you audition computer involved a people around the world. They are excellent vehicles feel reaching these people with your adverting memory and will be happened to the produce of the produce of the properties of the produce of the properties of the produce of



			Multiple Users: Yes, 4	Me
	Yender Sales Terms Purchase	Mountum Memory 512K bytes		
	Purchase Price \$9.985	Mazerum On-Line Storage 10	Maximum On-Line Storage: 20M	Word Length 16-bt
		betcs	Manman I/O Ports 4	Operating System: MCOS
	Date First installed: Sectioniber	Communications Protectls		Longuages Supported Basic
			Communications Protocols: .	Minimum Memory: 512K bytes
	Number Installed to Date: 500 -	Distribution, Endluser		Maximum Morrory: 512% tryles
	1.000	Yendor Seles Terms Purchase	Distribution: End user	Multiple Osers: Yes 32
	(See Vendor Profile Page V 1.7)	Leade	Vendor Sales Terms: Purchase	Messeum On-Line Storage: 1G
		Montenance On str	Purchase Price: \$2,000 to \$32,000	Podes :
			Mantenance, On-site, Therd-perly	Mesurant I/O Porty 32
	MASSCOMP			Communications Protocols.
	MCS00 SERIES	MICNOMATION, INC.	Date First Installed: 1978	Distribution Third corty
	Min	MARINER	(See Vendor Profile Page V-13)	
	Specific Application CAE Graphics			Yendor Seles Terres: Purchase
		Word Length 8 bit	WINI COMPUTER SYSTEMS.	Purchase Price: \$25,000 to
	Word Length 32 bit	Operating System: CPM MINET	IMC	\$200,000
	Operating System UNIX	MP.M		Mentenance: Thep-party
	Languages Supported Fortun. Pasca: C	Languages Supported Basic	MCOS 100	Average Marrienance Fee' \$1 200
			Men	Oate First Installed January 1979
		Moramum Memory 64K bytes		
	Maximum Memory GM bytes	Maximum Memory 512K bytes	Overetion System MICOS	MINICOMPUTEN SYSTEMS.
	Multiple Users Yes 16	Multiple Users Yes 8	Languages Supported: Danc	
		Maximum On-Line Storage 22M	Measure Memory, 64K bytes	INC.
	Maximum Dr-Line Storage 1G	bytes	Meaning Memory: 120K bytes	MICOS 350
	bytes	Mazimum I/O Ports 8	Multiple Users: Yes. 6	
	Maximum I/O Ports 48	Communications Protocols		Word Length: 16-bt
	Communications Protocols	Asynchronous Bounchronous	Masireum On-Line Storage: 256M	Operating System MICOS
	Asynchronous Ethernet		Maximum I/O Ports: 5 ,	Languages Supported Basic
	Distribution CEM	Distribution OEM		Minimum Memory: 768K bytes
	Yendor Sales Terms : Purchase	Yendor Sales Terms: Purchase	Distribution: Third-party	
	Punchase Price, \$25,000 to	Leune	Vendor Sales Terms, Purchase	Menmum Memory: 766K bytes
	\$100,000	Purchase Price: \$18 000	Purchase Price: \$20,000 to \$35,000	Multiple Users, Yes, 22
		Memberge TRW: Inc	Mexiconoce: Third-party	Maximum On Line Storage: 1G
	Maintenance On site	Date First Installed: January 1960	Average Meintenance Fee: \$200	
	Average Maintenance Fee: \$400	Number Instelled to Data: 100	Dete First installed: August 1977	
	Date First Installed November 1982	500		Communications Protocols: "
	Number installed to Date: 50 -	(See Vendor Profile Page V 13)	Number installed to Date: 300	2780.3780
	100		(See Vendor Profile Page V-14)	Distribution Trind-party
	(See Vendor Profile Page V 13)			Yendor Seles Terres Purchase
		MICHOMATION, INC.	MINI-COMPUTEN SYSTEMS.	Purchase Price, \$175,000 to
	MICRODATA CORP.	MI SYSTEM	INC.	
		Small business	MCOS 200	\$250.000
	REALITY	Word Length: 8-bit		Maintenance: Third-party
	Small business	Mineson Memory: 64K bytes	Mex	Average Maintenance Fee: \$1 600
	Word Length: 8 hr	Multiple Users, Yes 4	Word Length: 16-bit	Date First Installect August 1982
	Languages Supported: Basic	Maximum On-Line Storage: 10 1M	Operating System: MCOS	Number Installed to Date:
	Assertety		Lecousees Supported: Basic	
	Minimum Memory: 64K bytes	Meximum I/O Ports: 4	Moreum Marson: 128K bytes	MODULAR COMPUTER
	Mesmum Memory 512% bytes		Massyum Hemory, 255K bytes -	SYSTEMS, INC.
	Multiple Uppers: Yes 48	Communications Protocols.	Muttole Users: Yes: 24	
		Asynchronous Boynchronous	Maximum On Line Storege: 256M	CLASSIC 1/25
	Maximum On-Line Storage: 512M	Distribution: OEM		Men
	bytes	Vendor Sales Terms: Purchase	bytes	Word Length: 16-bs
	Communications Protocols		Maximum I/O Ports: 24	Operating System MAX Nº OS
		Purchase Price: \$7 000 to \$13 000	Communications Protocols: 2780	
	Distribution End user Third-carty	Marriemanne TRW Inc	Distribution: Trind-party	Fortran, Basic Basic plus Pascal
	Yeeder Sales Terres, Purchase	Date First Installed: 1950		RPG COOK
	Purchase Price: \$25,000 to		Purchase Price: \$50 000 to \$85 000	
	\$150,000		Majetenance Third-carts	Meximum Memory: 512K bytes
	Maintenance: On-site	MICROMATION, INC.	Arerege Meintenance Fee: \$450	Multiple Users, Yas
		MISTSTEM	Date First Installed 1973	
	Date First Installed: December 1973			Maximum On-Line Storage: 1 20
	Number Installed to Date 7,000		Number Installed to Date: 1,000 -	Meximum I/O Ports: 64
	(See Vendor Profer Page V 13)	Operating System: CPM MINET.	5 000	
		MPM		Convenientens Protocols:
	MICHODATA CORP.	Languages Supported Biric	NINI-COMPUTER SYSTEMS.	Asynchronous Synchronous.
	MOUSE.	Manager Memory, 64K byles	INC.	Brayronous SOLC x 25, HDLC
			MCOS 250	Dietribution: End user
6	Mn	Maximum Memory: 512K bytes	Mo.	Yender Sales Terms: Purchase
	Word Languer 32-54	Multiple Users: Yes. 8	See.	Purchase Price: \$28 800 to \$71 90
	Languages Supported: Basic:	Meximum On-Line Storage: 22M	Word Length 16-bt	Maintenance On-site Remote
		bytes	Operating System MCOS	
	Managem Memory: 512K bytes -		Larguages Supported Basic	diagnostics. Return to manufacture
	Maximum Memory, 1M bytes	Communications Protection		techty
	Multiple Users: Yes: 129	Asynchronous Brynchronous .	Maximum Memory: 512K bytes	
	Maximum On-Line Storege: 10	Distribution: CEM	Muteple Users: Yes, 32	(See Vendor Profile Page V-14)
	bytes	Purchase Price: \$13 000 to \$18,000	Maximum On-Line Storage: 256M	The state of the s
	Communications Protocols	Maintenance TRW Inc	DVSS	MODULAR COMPUTER

Mantenance: On-site Average Mantenance Fee: \$450 Date Fres Installed: May 1975 The Installed: Rige V-14) Minimum Memory: 256K bytes Maximum Memory: 2M bytes Multiple Users: Yes Maximum On-Line Storage: 1 20 NEC INFOR aumum On-Line Storage 1 20 des summum I/O Porte; 64 primariacitions Protocole ynchronous Stylic X 25 MDLC shoulder Edit jury note Sales Termic Purchase chase Prince; 543,200 to 0,000 See Ventor Profer Page V-14)
MATIONAL MICRO PRODUCTS,
NIC.
NIC.
NICE.
Small business
Word Length: 6-bit
Operating System CP-Ma Lenguages Boyer CP-Ma Lenguages Boyer CP-Ma Lenguages Boyer CP-Ma Lenguages Boyer CP-Ma Maginum Memory: 129K bytes Maginum Memory: 129K bytes Maginum Memory: 120K bytes Maginum 140 Portic: 3 Corresponsables Producosis: d Length: 16-bit valing System ASLE OS guapes Supported: XDL mun Memory: 128K bytes man Memory: 128K bytes intel Users: No man On-Line Storage: 20A man On-Line Storage: 20A frorous or Sales Terms: Durbous Pantal Purchase Price: \$3.000 Maintenance: On-size (See Vendor Profile Page V-16) ISON NORMAL HOR CORP. 1-9010 Small business Word Length: 8 ort Operating System: IDPS Languages Supported: Cook) -ne kinester filmfile filme ir 161 --ynchronous enbusion: End user notor Salves Terress: Purchase scheen Price: \$10 000 to \$40 000 internance: On-sile mber installed to Date: 100 — Baynchronous Destribution: End user Vacador Sales Terms: Purchase Purchase Price: \$10,000 to \$40 Maintenance: On-sic Number Installed to Date: 100 '500 (See Vendor Profile Page V-14) er installed to Date: 100 -Vendor Profile Page V-147 house property for the sales and the sales and the sales and the sales are sales are sales and the sales are sal

Word Langitt: 16-bit Operating Gysteen: DPE X Languages Supported: Exitor Minimum Memory: 564 Cysis Mustiple Users: Yes Mustiple Users: Yes Mustiple Users: Yes Destitution: End user Versider Sales: Terres: Purchase (See Verside Pottle Page V-15)	
MEXIDORF COMPUTER CORP. 600.145 Min. Word Length: 16-bit Operating Systems CPEX Lenguages Supported: Editor Meximum Memory; CAL Cybes Multiple Users: Yor. Basemum Ch-Line Storage; 122M.	
Distribution: End uter Vendor Sales Terms: Purchase HIEDORF COMPLITER CORP.	1
600 50 Mey Word Length: 18-bit Operating System: OPEX Larguages Supported Editor Menturus Menergy EMS Upton Menturus Menergy EMS Upton Operating Systems Operating EMS Systems Upton Sales Termin Purchase Menerges Colonia Storage Systems (Descriptions)	
MIXTOORY GOSPUTER CORP. 8845 Small business. Weed Langin: 16-bit Opiniting System: NOS Languages Supported: Editor Monitors Manages: USA bytes Manages User: Yes 3 Massemum On-Line Storage: 6546 1965. Communications Producebs Synthetical	
Vendor Sales Terms: Purchase. Rental Purchase Price: \$30,000 to \$150,000 Maintenance: On-site Date First Installed: February 1962	
MILIDORY GOSPUTTER CORP. 5850 MOOSI, 16 bit Mon Word Leegel: 16 bit Operating System: DPOSI Obsessing System: DPOSI Obsessing System: DPOSI Obsessing System: DPOSI Macron Memory 18 Dytes Macron Memory 18 Dytes Macron DPOSI Obsessing System Adjections Preferable Adjections. Systemonics Destination: End user	
Lesse Purchase Price: \$32,500 to \$150,000 Maintenance: On-site, Pernote dispression Date Price Installed: 1981	
NIXBORF COMPUTER CORP.	1

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Length: 16-bit
ting System: CHPOS
ages Supported Cobol
um Memory: 512K bytes
sen Memory: 1M bytes
to Users: Yes 24
sen On-Line Storage: 312M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Memory: 512K bytes
t Memory: 1M bytes
Deent: Yes, 24
o On-Line Storage: 653M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Approximate Approx
                                                                SNA
Bullion: End user
          Vendor Salas Terms: Purch:
Jesse
Nurchase Price: $29,600 to
1211,000
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de Length: FE-bt Cook

stating System: DEC Cook

ran, Basin; FB-bt II Cyte

ran, Basin; Pascal AR, EV-II C

www. Memory, 1284 Dytes

stream Special Cook

rand Stating System

stream Special Cook

stream Special Coo
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          Agintenance: Union 1....
Regnostics
Tent Installed: 1981
          HIXDORF COMPUTER CORP.
More McDCL 5
More Length: 16-bit
Operating System: DIPOS
Lenguages Supported: Cobol
Moreover Memory: 5125 bytes
Maximum Memory: 765K bytes
Multiple Users: 176: 12
Maximum Ob-Line Storage: 1M
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          risan, Isaac, Pasca, Roha, Sannoninem Memorpy, 128k byless
stimuum Memorpy, 128k byless
stimuum Memorpy, 237k-Dyless
stimuum 10 Percis 20
stribunian End user
midel Saless Termis: Purchase,
1788 Lesse
imateranico On-sira, Return to
nutatourny facility
or Frest testeded. 1978
                                                                                                                     ications Protocols:
nous, Synctronous
on: End user
lates Terms, Purchase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Word Length: 18-bit Opening Bystem RT-11, RSK-11H - RSK-
                                                                                                se Price: $18,000 to $63,360
                                                                                                tos
rel installed: 1961
                                                                                                RF COMPUTER CORP.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     ford Longsh: 15-bt
speciating System: SINTRAN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                om Memory: 125K bytes
um Memory: 32M bytes
e Usere: Yee
um On-Line Storage: 2 3G
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          d Langth: 16-bt -
rating System: PSX-11M
SIE RT-11. RSX-11S
puspes Supported: Cobel.
on Basic Pascal, APL, PL/1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     in Memory: 32% bytes
in Memory: 4M bytes
in Memory: 4M bytes
i Users: Yes
in L'D Ports: 19
principos Desterote:
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	MAILI	s/ Sman busine	.ss Computers
HORSK DAYA NORTH	Purchase Price: \$5,000 to \$17,000	Mastrum On-Line Storage, 160M	manufactures factor
AMERICAN, INC. NO SATELLITE'S	Maintenance: Third-party (See Vendor Profile Page V-15)	bytes Management of Books 26	manufacturing facility Date First installed: October 1981 Number Installed to Date: 600
Min Operating System: SINTRAN BIVS	ONYX SYSTEMS, INC.	Communications Protecels: Bisynchronous SOLC SNA	(See Vendor Profile Page V-16)
Languages Supported Fortran Basic Pascal PED Note-WP	CROC2 Mes	Outsthusion OEM Vendor Sales Terms: Purchase Purchase Price: \$67,000 to \$60,900	PEGASUS DAYA SYSTEMS PEGASUS CONQUEROR
Maximum Memory: 512K bytes Maximum Memory: 21 7M bytes	Word Langth, 16-bit Operating System: UNIX		Small business Word Length: 8-bit
Multiple Users: Yes Meximum I/O Ports: 9	Languages Supported Cotol forten Basic	Average Maintenance Fee: \$540 Date First Installed April 1961 Number Installed to Date: 500 —	Operating System: CP-M PDOS Languages Supported: Cotol. Fortran, Basic, Pascal C
Communications Protocols: HDLC.		Mumber installed to Date: 500 -	Fortran, Basic, Pascal C
NO-Net Describution: End user	Mazerum Memory: 1M bytes Multiple Users: Yes 8	1,000 (See Vendor Profile Page V-16)	Moreum Memory 64K bytes Maximum Memory 256K bytes
Vendor Sales Terms: Purchase	Maximum On-Line Storage: 40M bytes	PARALLEL COMPUTERS, INC.	Maximum Memory: 256N bytes Maximum On-Line Storage: 10M
	Maximum I/O Ports: 9 Communications Protocols:	CPU16/100 Small business	Maximum I/O Porte: 3
manufacturing facility Date First Installed: 1962		Operating System: LPAX	
HUCLEAR DATA, INC.	Distribution: Third-party Vendor Sales Torms, Purchase	Operating System: LNIX Languages Supported: Cobol Formen Basic Pascal C	Asynchronous Destributions CENA
680 Men	Purchase Price: \$24,000 Maintenance: RCA	Mountain Memory: 512K bytes	Vendor Sales Terms: Furchase Purchase Price: \$990 to \$1,500
Specific Application: Data Acquisition	Date First Installed: 19815 Number Installed to Date: 1 000 —	Maximum On-Line Storage: 26007	Maintenance Return to manufacturing facility Date First Installed November 1982 Number Installed to Date: 100
Word Length: 15-bit	5.000	Maximum On-Line Storage: 2600/ bytes Maximum I/O Ports: 16	Date First Installed: November 1982
Operating System: RT-11 Languages Supported: Forfran	(See Vendor Profile.Page V-15)	Measure to Porte 16	
	OSM COMPUTER CORP. ZEUS 2	Communications Protocols: Asynchronous Beynchronous SDLC SNA 3270	PERIPHONICS CORP.
Minimum Memory: 55K bytes Maximum Memory: 55K bytes	Small business	Distribution DEM	
Macroson I/O Ports, 4	Word Langue 8-bit Operating System: MUSE, CPM	Distribution OCM Vender Sales Terms: Purchase Purchase Price: \$25,000 to \$42,000	Word Langth: 16-bit Languages Supported: Assembler.
Communications Protocols: Asynchronous DOCMP	Languages Supported: Cobot.		Forth Minimum Memory: 32% bytes
Distribution Endluser .		Average Maintenance Fee: \$420	Maximum Memory: 512K bytes Multiple Upper: Yes.
Detribution End user Vendor Sales Terms: Purchase Purchase Price, \$30,000 to \$50,000	Maximum Memory: 156 bytes Multiple Users: Yes 4	manufacturing facility Asverage Maintenance Fee: \$420 Dete First Installed: January 1902 Number Installed to Date: Less then	
	Meximum On-Line Storage: 200M tytes	10 (See Vendor Photie Page V-16)	Asyndronous Brayndronous
Date First Installed, January 1961 Number Installed to Date: 75 (See Pender Profer Page V- (5)	Maximum I/O Ports: 35 Convenications Protocols:	PARALLEL COMPUTERS, INC.	Createuron: End user Yendor Sales Terres: Purchase
NUCLEAR DAYA, INC.	Vender Sales Terres, Purchase	Small business Operation System Lifett	Maintenance: On-site Date First Installed: June 1962 (See Vendor Prolite Page V-16)
Mirs Word Longth: 15-bit	Purchase Price: \$15 000 to \$32,000	Languages Supported Cobor	(See Vendor Profile Page V-16)
	Distribution: Tord party Vender Sales Teres. Purchase Purchase Price: \$15 000 to \$32,000 Maintenance: Throughty Date First Installed: March 1982 Number Installed to Book: 100 —	Small Coliness Operating Systems UNIX Languages Supported: Cobol Fortan Basic Piscal C Sterious Memory: 5120 bytes Maszman Memory: 541 bytes Multiple Leers; Yen: 32 Maszman Ott-Line Storage: 1 6G	PERIPHONICS CORP.
Languages Supported: Fortran Basic		Maximum Meropry: 5M bytes Multiple Georg: Yes: 32	Mor
Minimum Memory: 128K bytes Maximum Memory: 1M bytes Multiple Users: Yos. 20 Maximum On-Line Storage: 300M	(See Vendor Profile Page V-16)	Masseum On-Line Storage: 1 6G bytes	Word Langth: 16-bit Languages Supported: Assembler
Mutigee Users: Yes 20	OSM COMPUTER CORP.	Maximum I/O Ports: 32 Communications Protocols:	
byles Maximum I/O Ports: 40			Maximum Memory: 32% bytes Maximum Memory: 512K bytes Multiple Users: Yes
Maximum I/O Ports: 40 Communications Protocols	Word Longth: 8-bit Operating System MLRF CPM	SOLC SNA. 3270 Distribution OFM	Multiple Users: Yes Communications Bresness:
	Languages Supported Coper.	Vendor Sales Torne: Purchase	Asyndronous Bayndronous
Distribution: End uter Vendor Sales Terms: Purchase	Word Length: 8-bit Operating System: MUSE CP M Languages Supported: Cotor. Forten: Basic Paccal PU! Mintenum Memory: 64th bytes Macassum Memory: 512k bytes	SNLC SNA, 3270 Distribution: OEM Vendor Safer Termit: Furthers Purchase Price: \$25,000 to \$75,000 Maintenance: Return to manualcriving story Annualcriving story Annua	Communications Protects: Asynchronous Beynchronous Destibution: End user Vendor Saltes Terms: Purchase Purchase Price: \$150,000 Maintenance: On site
Purchase Price: \$45,000 to \$150,000	Maximum On-Line Storage: 6064	Average Maintenance Fee: \$420	Maintenance: On-site Date First Installed: May 1982
Maintenancer On-site Date First Installant: June 1976	Maximum On-Line Storage: 6064	Date First Installed: January 1982	Date First Installed: May 1982
Date First Installed: June 1976 Marrier Installed to Date: 500			PERTEC COMPUTER CORP. PERTEC 2000
OCTAGON COMPUTER	Communications Protocols. Asynchronous Synchronous	PEGASUS DATA SYSTEMS	
SYSTEMS OCTAGON 8/16	Distribution Thris-party Vendor Sales Torres: Purchase Purchase Price: 58 000 to \$12,000	Small business	Operating System: P3003 P3000
Small business Word Longth: 5/16-bit	Purchase Price: \$8 000 to \$12,000 Maintenance: Third-purty		Languages Supported: Batic
Operating System: CPM 80 CPM 36 MS-DOS PC-DOS Languages Supported: Cobril Forman Basic Pascal M Basic	Date First installed: June 1982 Number Installed to Date: 100	Word Length B-Ost Operating System: PDOS. CP M Languages Busperlant: Cobol, Forman, Bear: Paccal C Memans Memory, EM Cytes Meanman Memory, 250x, bytes Machines Memory, 250x, bytes Multiple Users: No Meaninum Ob-Line Storage: 2 4M house	Small busness Word Langth: 18-bit Operating System: P3003: P3000 Languages Supported: Balo: Mindean Memory: 2505 Cyties Maxeman Memory: 1K bytes Muttels Users: Ver. 8 Massessin On-Line Bernge: 140M
Languages Supported: Cotosi	500	Morram Memory: 64K bytes	Maximum On-Line Biorage: 140M
	PARABYNE CORP.	Maximum Moreory: 256K bytes *	Maximum I/O Porte: 16
Manaman Memory: 250K bytes Masaman Memory: 1M bytes Flutigie Users: Yes. 8 Maximum Cn-Line Storage: 105M	\$400 Mrs	Meximum On-Line Storage: 2 4M	Communications Protocols:
Nutipie Users: Yes. 8	Word Longth: 16-bit	Maximum I/O Parte: 4	Distribution: Third-party
	Word Langth: 16-bit Operating System: UNIX Languages Supported: Cobol Pascal C		Communications Protocols: Asynchronous Distribution: Third-party Vender Sales Terris: Furchase Maintenance: Third-party Date First Installed; June 1982 Number Issasked to Date: 1 000 —
Communications Protectis: Brynchronous, Octanet	Fascal C Monmum Memory: 256K bytes	Vender Seles Terms: Purchase	Date First Installed: June 1982

5 ichronous Bution: End user Ior Sales Terms: Purchase I/O Ports: 32 rhuser: OEM dor Sales Terras: Purchase hase Price: \$37 950 flerance: Return to utactumg facility, On-sis. Third-trictumg facility, On-sis. Third-Vendor Sales Terras: Puchase
PVB TERM PCRIPPIERAL
SYSTEM PCRIPPIERAL
SYSTEM 40 SERRES
Mon.
World Marght 16-20
11 MARMS 163-20
11 MARMS 163-20 Pronous busine: Third-party or Bales Terres: Punchase anance: Third-party third lautables: 1969 imum tu-imumcation Protein-richtonia. Bibulion: Theopaty side Sales Teres. Furches sides Seles Teres. Furches sides Price 55 000 to \$10,000 reseasance: Theopaty sie First Installed: Varch 1979 is First Installed: Varch 1979 installed to Date: 500 party
Date First installed: September bytes
Communications Pretocols:
Asynchronous Synchronous
Binynchronous, SDLC, SDLC SNA,
X 23
Desiribution: End user on 1/0 Ports: 32 is vibution: OEM dor Sales Terms: Purchase chase Price: \$42,950 neesance: Recurs to nulacturing facility. On-site. Th party Page First Installed March 1983 POINT FOUR DAYA CORP.

100 (See Vendor Profile Page V-17)

PLEXUS COMPUTERS
PLEXUS P.35
Men
Men
Word Length: 22-bit
Operating System: Unit:
Languages Supported: Cobol,
Fortran, Sass: Placoil, C
Minimum Mannary: 231b bytes
Maximum Menory: 231b bytes
Maximum Menory: 201b bytes
Maximum Menory: 201b
Menory:

reum I/O Pents, o humications Protectals, chronous lest terms: Purchase hase Price: \$10,000 to \$12,000 ferenters on site. Therbarry rape Membershance Pent 5100 First Installed, May 1272 Livendor Profile Page V-17) PRODICY SYSTEMS, INC.
PRODICY 2
Serial Downess
Werd Langin: 5-bit
Operating System: CPIAL PROTICE
Lenguages Experient: Protog
Manisons Memory: 64th Oynes
Manisons On-Lane Bioresge: 20.5M

Distribution: End user	REXON BUSINESS MACHINES	Asynchronous Bisynchronous	Basic Pascal
Vendor Sales Terme, Purchase	CORP.	Distribution: Endluser	
Purchase Price: \$80,000 to	fix30	Vendor Sales Terms: Purchase	Meakway Memory 512K byses
\$800,000	Men		Multiple Users: Yes A
Martenance: On-site	Word Length: 16-bit	Meintenance: On-site	Meximum On-Line Storage: 200
Average Maintenance Fee: \$2 400	Operating System: PECAP MPM	Average Maintenance Fee: \$420	
Date First Installed: 1979 Mamber Installed to Date: 50	86		Mazimum I/O Porte: 16 Communications Protocols:
Mamber Installed to Date: 50 -	Languages Supported: Cobol	Number installed to Date: 100	Communications Protocols:
,100	Forvari Basic Pascal PL/1 C	500	Asynchronous Synchronous
RAYTHEON CO.	Minimum Memory: 64K bytes Maximum Memory: 960K bytes	(See Vendor Profile Page V-18)	Baynchronous
RDE 7500 RAYNET IV	Multiple Users: Yes 5	SCENIC COMPUTER SYSTEM	Distribution: OEM
Men	Heaven On-Line Storage: 40th	CORP.	Vendor Sales Terms: Purchase
Specific Application: Message	bates	SCENIC MODEL ONE	Purchase Price: \$3,000 to \$16.0 Mentenance: OEM
Switching	Maximum I/O Ports: 9	Mon model one	Date First Installed January 196
Word Length: 16-bit	Communications Protocols:	Word Length: 32-bit	Number Installed to Date: 3
		Operating System, UCSE	NUMBER INSCREED TO DATE: 3
Languages Supported: Cobol.		Languages Supported Fortran,	SECONO SOURCE
		Danic Pascal Assertair	COMPUTERS, INC.
Minimum Memory: 64K bytes			SSCI-100
Maximum Memory: 256K bytes			Man Man
Muttiple Users: Yes. 6	Date First Installed: April 1960		Word Lengthy (6-bit
Measure On-Line Storage: 256M	Mamber Installed to Date 100 -	Meximum On-Line Storage: 100M	Operating System UNIX OS-100
trytes	500		"Obergrand phases (NeX 02-10)
Meakeurs I/O Ports: 125		Maximum I/O Ports: 20	Languages Supported Cooci Fortran Assentiar
Communications Protocols:	REXON BUSINESS MACHINES	Communications Protocols:	Minimum Memory, 256K bytes .
Beynchronous PARS SLC	CORP.		Maximum Hemory: 1M bytes
Distribution: End user Vendor Sales Terms: Purchase	FX100	Distribution OEM	Mutable Users: Yes. 18
Lease	Mrs	Vendor Sales Terms: Purchase	Maximum On-Line Storage: 6001
Purchase Price: \$60,000 to	Word Length: 16-bit	Purchase Price: \$10,000 to \$25,000	Dytes
\$600,000	Operating System: RECAP MP M	Date First Installed: Junuary 1963	Communications Protogols:
Maintenance: On-site	86	Number installed to Date: 60	
Average Maintenance Fee: \$2 400	Fortraf Basic Pascal PL/1 C	(See Vendor Profile Page V-18)	
Date First Installed: 1979	Movement Marriory: 128K bytes		
Number legisled to Date: Linder 10	Maximum Memory: 950K byers	ECI SYSTEMS, INC.	
The second secon	Multiple Users: Yes 8	Min Min	
REXON BUSINESS MACHINES	Maximum On-Line Storage: 300M	Word Length: 16-pt	- Purchase Price: \$30,000 to \$100,000
	twee contracts and	WANT CHARLE TO CE	\$100,000
ROC15		Languages Supported Color	Maretenance: On-ste
Mn	Convenuestions Protocols:	Operating System VOS Languages Supported Cobol. Pascal Micro-Basic	Date First Installed: March 1983 Number Installed to Date 5
Word Length: 18-bit			See Vendor Profile Page V-191
Operating System RECAP MPM	Distribution: Trind party		(See Vendor Prone Page V-19)
86	Vendor Sales Terres, Purchase		ALL PARTY OF THE P
Languages Supported: Cobol. Forman, Basic Pascal PL/1-C	Purchaes Price: \$13,000	Maximum On-Line Storage 30064	SENTINEL COMPUTER CORP
FORMAN, BASIC PASCAI PL/1 C	Maintenance: TRW. Inc	bytes	SENTINEL-30
Minimum Memory: 64% bytes Meximum Memory: 960% bytes	Date First Installed: August 1982.	Communications Protecols:	Mer
Multiple Users: Yes. 6	and the second s	Asynchronous Synchronous."	Word Langth: 16-bit
Maximum On-Line Sterage: 20M	REXON BUSINESS MACHINES CORP.	Daynchronous SDLC HDLC	Operating System OGOS
Dates	RX400	Distribution: CEM	Languages Supported, Cobol. Basic Cits.
Maximum I/O Party 9	Mari	Vendor Sales Terms: Purchase	Mentrum Memory: 96K bytes
Communications Protocols:	Word Length: 16-bit	Purchees Price: \$25,000	Manmum Memory: 1M Dytes
Asynchronous Bounchronous	Operating System: PECAP MPM	Maintenance: On-site	Multiple Users, Yes, 17
Distribution Transports	cobessed obsess uccess, marrie	(See Vendor Profile Page V-18)	Maximum On-Line Storage: 1 20
Vender Sales Terme Purchase	Languages Bapported Cotor	SCI SYSTEMS, INC.	manufacture and age: 120
Purchase Price: \$22 000	Fortran Basic Pascal PL/1 C	MERCURY 2	Maximum I/O Ports: 17
	Minimum Memory: 128K bytes	Mo.	Communications Protocole
	Maximum Memory: 960K byles	Word Length: 16-bst	Atunctronous Pasanctronous
	Multiple Users: Yes 15	Operating System VOS	Distribution: End user Third-party
500	Masimum On-Line Storage: 200M	Languages Supported Colors	
(See Vendor Profile Page V-18)		Languages Supported: Cobo:	Rental
	Maximum I/O Parts: 17	Minimum Memory: 64K bytes	
REXON BUSINESS MACHINES	Communications Protocols:		Maintenance: On-ste, Third-porty
CORP.	Asynchronous Baynchronous	Multiple Users: Yes 16	Average Maintenance Fee: \$270 Date First Installed: July 1979
	Distribution: Trap-party Yender Sales Terms: Purchase	Maximum On-Line Storage: 300M	Date First Installed: July 1979
Mord Length: 15-bt	Vendor Sales Terms: Purchase	Dynes	
Operating System: RECAP, MPM	Purchase Price: \$19 000		500
operating system: RECAP, MP M	Martenance: TRW, Inc.	Asynchronous Synchronous,	(See Vendor Profer Page V-15)
Languages Supported Cobol	Date First Installed: 1982	Brightmonous, SOLC, HOLD	
Fortan Besc Pascal PU1, C	REYNOLDS & REYHOLDS CO.	Distribution: DEM	SENTINEL COMPUTER CORP.
Manager Manager PUT, C	EXPANSION SOCO	Vender Sales Terms: Purchase	SENTINEL-40
Mestrum Memory: 64K bytes Mestrum Memory: 960K bytes	Small business	Purchaes Price: \$12 000 to \$35 000 Mexitonance: On-site	un
Multiple Users: Yes. 8	Word Length: 5-bit	Obta First Insulant 1978	Word Length: 16-br.
Masseum On-Line Storage: 2011	Operating System: CP1M	Number Installed to Date: 500 —	Operating System DBOS
			Languages Supported: Cobol.

other Physics Plans V. 250

tie Users: No numications Protocolis: fromous. Synchronous before End user of Sales Terres: Purchase ese Price: \$1,000 to \$30,000 preance. On site fivest installed: 1976 or Installed to Date: 100 —

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Waterman and Market 19 July 20	TEMS, NIC.
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Commentation Protection Section 1997 (Section 1997) Sectio	
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Action place Mod 20 to 100 committy Space 100 committee Space 100 comm	200 man
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V77-XXX SERIES Maximum I/O Ports, 64 TELEGERIES, INC. Mry Consequinations Protocols: MTDS TEXAS INSTRUME	olocek:
V77-XXX SERIES Maximum I/O Ports, 64 TELEGERIES, INC. Mry Consequinations Protocols: MTDS TEXAS INSTRUME	
MY Communications Protocols: MTDS TEXAS INSTRUME	ic Plurchase
Word Length: 18-31 Operating Species: VIDITIX Languages Septem vIDITIX Word La	
Operating System: VORTEX Linguinger Supported: Cobot: Vendor Folian Purchase Prior, 270,000 in World Leader 18,34 Operating System: VORTEX Small Dustries S	
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Manager Memory: 4M Sylan Maintenance: Chrolin Maint	29K Intes
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or Sales serres: Purchase, ease Price: \$9.995 to \$21,000 enemies: On-sile, Return to sortung facility ge Meintenance Fee: \$90 Fest Installed: November 1960 fendor Proble Page V.21)

mance Fee: \$300

Remember to mention the Computerworld Buyer's Guide when contacting vendors.

Purchase Price: \$39,000 to \$42,000 Maintenance: On-site Average Maintenance Fee: \$400 Page Spart beauties: 1981 Languages Supported: Cobol Fortran Danic, Pascal, Microsoft Distribution: End user, OEM. Transparty Purchase Price: \$19,900 Maintenance: On-site Aversor Maintenance Fee: \$200 Communications Protocols: Asynchronous Distribution: End user: OEM Vendor Sales Terms: Purchase mum Memory: 64K bytes mum Memory: 64K bytes ple Users: No mum On-Line Storage: 5M Date Prett Installer: 190.
D3960; 29
D3960; 29
Operating System CX10 DNOS
Languages Supported Cobol
Fortrant Date; Pancal, BPG
Minimum Memory: 236% bytes
Multiple Users: Ver. 30
Maxemum Mercy: 20 bytes
Multiple Users: Ver. 30
Maxemum CAL-Languages 995M
Maxemum CAL-Languages 995M VICON SYSTEMS, INC. Meshamo Or-Lase Sicrage: SM bytes
Masanum NO Ports: 3
Masanum NO Ports: 3
Communications Protocols:
Asynchronous
Destributors: Theroparty
Vendor Setes Terms: Purchase
Purchase Prior: 26:295 to 29:150
Meshamous Consist, Turric-party
Data Print Installation: 1382
(See Windor Popile Page V-27) facility
Average Maintenance Fee: \$200
Date First Installed: August 1981
Number Installed: August 1991
Son
Son Vendor Profile Page V-211 olic Application: Image Processor
Word Length: 16-bit
Operating System: VERSA DOS.
UNIDOS Linguage Supported: Portran Pascal, Assembly Minimum Berseyr: \$12X bytes Maximum Morrory: 1M bytes Maximum Morrory: 1M bytes Maximum Morrory: 1M bytes Maximum Morrory: 1M bytes Statistics of the Storage: 500M bytes Sold Vision's Profit Rigic V-27 - Tomick College V-27 - Tomick Col cyles Maximum I/O Portix 45
Communications Protectis:
Bisynchronous, SDLC, SDLC SNA
X 29 HOLC See Vendor Profer Page V-21)
TWW-PLATTSU CORP.
FULTSU 8000
Word Length: 16 bc.
Operating Systems: ONGS
Languages Supported: Cooci
Fortan Page
Miximain Haemory: 25(K bytes
Multipla Users: Yes, 45
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Meathann Co-Line Storage: DOOM
Meathann Co-Line Storage: DOOM HOLC Businer: End user for Sales Terms, Purchase Asse Price \$70,000 Haintenance On-one Average Maintenance Tee: \$650 David Print Installed: 1979 bytes Mesiware I/O Ports: 8 Communications Protocols: Bsynchronous, SDLC, HDLC, RG STRI USBBOLTO
Mont Length: 16-bit
Word Length: 16-bit
Operating System: DX10. DNOS
Lenguages Supported: Cobo:
Fortain Basic, Pascul APG
Mineraum Memory: 256t bytes
Maximum Memory: 254t bytes
Maximum Memory: 254 bytes
Maximum On-Line Stonege: 192M
Dates often frozio Project 2-27 : TORICH COMPATTERS LTD.

CT 1100

TORICH COMPATTERS LTD.

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COMPATTE Cities Window Profile Page V-21)
UNILODARP COREN.
PURIL AD
Specific Application: Data Entry.
POS poling CADICAM
Ward Length 30-bor
Operating Systems (INX)
Lenguages Supported Cotol.
Forman States (Pascal APIL, Cotols
Maximum Memory) 1/25 (yes)
Maximum On Line Storage: 725M
Oyles
Maximum On Line Storage: 725M
Oyles stated: 1979 The second secon D5980.79
Most Length 18-bit
Word Length 18-bit
Operating System: DX10: DNOS
Lenguages Suspented: Cooc,
Forta: Basic Pascal RPG
International Researcy: 250% types
Maximum Memory: 250 types
Maximum Memory: 250 types
Maximum North 198
Meminum On-Line Storage: 96:5M num I/O Porte: 18 unications Protocols. ronous silion: End user DEM: Thron I/O Porte: 46 Nostiona Protocole: onous: SOLC: SOLC:SNA Date Free Installed November 19: TORICH CORPUTURE LTD. CF1160 Small Dusiness Word Length: Dusi 8-ini Operating System: CPM Lenguages Supported: Cottol Fortran Saise; Pascal C Minimum Memory: SRX bytes Maximum Remory: SRX byte Dissistation End user DEM: Throparty
Vender Sales Terms: Purchase.
Persal Lusse
Persal Lusse
Persal Lusse
Arrenge Maintenance Co. 314
Arrenge Maintenance Fee: \$200
See Vendor Prolie Page V-22) Shape Price: \$87,000 to science of the control of the contro te Application: CADICAN ic Approximation of the Control of t

Memory: 512% bytes Memory: 2W bytes Jeers: No On-Line Storage: 64M

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See Our Vendor Listings, Page V-1

ese Price: \$73,000 WICAT SYSTEMS, INC. Mord Length: 15:32-bi Operating System: UNIX MCS warning Memory: 512K bytes senum Memory: 512K bytes senum Memory: 4 5M bytes right Users: Yes. 12 selsam On-Line Storage: 474M Maximum OH-Law Storage: a ree bytes Maximum I/O Porte: 14 Commerciations Protocolis Commerciations Protocolis Commerciations Protocolis Storage Commerciation Storage Commerciation September 1960 President Police 15 (2000 september 1960 Namber Institute of South Institute Despiration (1960 Police III) — 50 (See Visitor Police Page V-20) WICAT SYSTEMS, INC. SYSTEM 200 Mins Word Length: 16:32-bit Operating System: UNIX MCS mbler num Memory: \$12K bytes num Memory: 5M bytes pie Users: Yes: 32 num On-Line Storage: 474M Imam De-Lies Sterage: 474M j
imam LD Ports: 38 j
imam LD Ports: 38 j
imam Protectors: 6 j
imam Sterage 0.000 etenence: On-site enage Maintenance Fee: \$275 e First Installed: September Installed to Date: 500 --WIGAT SYSTEMS, INC. SYSTEM 300 olde Application School

Detrouser End user

Specific Application: General Number installed to Date: 50 --Purpose
Word Length: 8-bit
Operating System: WIZRO, UCSD-P 100 (See Vender Profes Page V.22) ZHLOO, INC. 8000 Operating System: WIZHD, UCSC SYSTEM Languages Supported: Fortran, Basic, Pascal C Mulman Memory: SSK bytes Massimum Memory: SSK bytes Massimum Memory: SSK bytes Massimum On-Line Storage: SSK Massimum On-Line Storage: SSK ZRLOG, MIC. 8000 Small business. Small business. Word Length: 19-bit Operating System: ZRLS LINOX Leaguages Exapported Cobol, Forman Paccal C. Assembler Meximum Memory: 26KK bytes Meximum Memory: 26KK bytes Meximum Memory. 4KK bytes Mushiple Users: Vis. 24 Massimum On-Line Sterage: 320M um I/O Porte: 8 mum I/D Porte: 16 munications Protocols: chronous Beynchronous, X.25. Cottenana.
Approchamous Beginchera.
Znid 2
Z 1,000 (See Vandor Profile Page V-22) S2 MS-OGS Languages Supported: Cobol Fortran Basic Pascal Maximum Memory: 129K bytes Maximum Memory: 129K bytes Maximum Memory: 129K bytes Maxigle Users: Yes Communications Protocols: Asynchronous, Synchronous. Asynchronous, op-Berynchronous Designation: End user. Third-part Vender Sales Term. 2015 of the Vender Sales Term. 2015 of the Maintenance. Christia, Responsibility, Maintenance. Christia, Responsibility, Maintenance. Christia, Responsibility, Date First Installed: 1653 (See Vendor Pholie Page V-22) nctivonus ribution: End user, Third-party der Seles Terms, Purchase rhase Pricer \$3,395 to \$5,295 stenance: On-site, Remote nositios, Return to menufacture encellone Professional forcus from End utter Target Purchase. xenox conp solo Shall business Werd Length: 18-bit Languages Supported: Cobot Basic Marinum Memory: 18-bit the chase Price: \$4,000 to \$12,000 whenever: Return to viacturing facility in Fresh twestelled: October 1980 when twestelled: October 1980 when twestelled to Dete: 100 guages Bapperfell Coton: innum Memory: 192K bytes Rigle Users: Yes renerications Protocole: northorous: Synchronous: informous rebations: End user. Third party other Stages Termis: Purchasie insteadors: Che-sin; Return to mideoptiming facility. iffic Application: Digitaring ating System: RSX-11 unique Supported: Cotot on: Basic Pascal; APL; PU1, C num Memory: 256K bytes num Memory: 256K bytes pic Users: Yes, 4 mun On-Line Storage: 40M ONE 100 Duswins Langth & Ot Langth & Ot Langth & Other Langth & Ot

Discover the personal business computer with a

The NCR DECISION MATE V.

A PC you'll love to work with.

The personal computer you select for your business should belp you do more faster. And just as important it should remember that it works for you and not vice versa. That's why we built the personal/business computer with a heart: the NCR DECISION MATE V.

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It's versatifie Use the NCR DECISION MATE V as a stand-alone PC, an online terminal, or in a network of personal computers.
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munications Protecols: chronous bution: OEM for Sales Terms: Purchase nesse Price: 58 (00) party First installed October 1982

RTE IS REAL-TIME EMULATOR MODE Werd Length: E-old Operating System: CPIM. ANDOS Lenguages Suspended: Assembly Minimum Memory: 125K bytes Maulinum Memory: 255K bytes Maulinum On-Line Storage: 10M bytes

System of Control Straight (16) byte Maximum & O Ports: 3 Communications Protocolar Asynchronous Obstitution: OEM Vendor Sales Terms: Purchase Pruchase Process \$15,000 Maintenance: Process \$15,000 Maintenance: Control disprosion. Return to enanufacturing facility. nd-party on-Part Installed: January 1982

ABVANCED MICRO DIGITAL More Ward Langth: 8-bz Operating System: CP/M: MP/M. TURBO DOS Languages Bupperted: Cobol. Fortran. Basic, Basic plus. Basic plus

Fortran Base, base purchases 2: Pascel Melman Memory: 64K bytes Multiple Users: Yes Maximum On-Line Storage: 600M samum DP-Line Storage: 000M in the Control of the Control of the Control of international control of the Control of international control of the Control of international control of the Control

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Communications Protocols: Asymptomous Destination: CBM Particles: CBM Vender Saine Terms: Purchase Prechase Prior: \$8,000 to \$8,000 Saintenance: On-site Date Part Installed: April 1963

LDVANCED MICRO DIGITAL DORP. RIPERBLAYE

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CPMA, MPTM, PICK
Languages Special, Chooc,
Progress, Seed, Chooc,
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ALBERT COMPUTER, NO.
COMPUTER, ALTOS COMPUTER SYSTEMS, INC. ACS 8000 SERIES Persons Word Langth: Solt Operating Systems CP/M. DADS, MS/M.

Opening Bystem: CPM: CASS; MF/M
Lengueges Suspicined: Coool, Forten, Seoil, Pascel, C
Millioman Memory: BM: bytes Maximum Memory: 200K bytes Multiple Users: Yes, 4
Maximum On-Line Storage: 116M

ALBPA COMPUTER, 1940.
ACI-1
Desktop
Word Laught: S-bit
Operating System: CP/N
Largueges Supported: Cobol.

MATISE Users Yes, A Matismy Dr-Live Strenge: 116M bytes Maximum (Dr-Live Strenge: 116M bytes Maximum (Dr Peris: 5 Communications Proteopolis Approximation, Symboronous, CPMST Development CEM Development (DEM Development CEM Development (DEM Dev Cities Vendor Proties Fago V-1)
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A TOS COMPUTEN O VETENIA, MICO.
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ACCI SEC

Member installed to Date: 10,000

Blazer, Parcell, R. J., C.

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Machine Do-Like Sterage: 22M

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Machine LO Pords 5

Communications

Protection (Lyne)

Machine LO Pords 5

Communications

Machine LO Pords 5

Distribution: Three purpose

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Machine Long (MK Lyne ALTOS CORPUTER SYSTEMS
ALTOS CORPUTER SYSTEMS
ACCI \$6000
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Word Langels: 32-46*
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Consoling System: URX
Maximum Homes; 513X, Syste
Maximum Homes; 101 System
Maximum Homes; 101 System
Maximum Homes
Maximum Con-Line Storage: COM es menunications Protocols: inchrorous inbution: OEM chase Price: \$14.500 to \$16.500 intensece: TRW, inc. in First Installed: 1982

Operating Systems APP.M.R. CPIAL OASIS Minimum Memory: 192K bytes Multiple Users: Yes. 3 Communications Protocols: Asynchronous. Distribution: OE.M. Vender Sales Terms: Purchase Purchase Prior. 52,990 to \$8,460 Maintenasca: TRVI, Inc. Des Prior Installed: January 1983 Des Prior Installed: January 1983 ALTOS COMPUTER SYSTEMS, INC. ALTOS SERIES 6 Micro Word Length: 18-bit Operating System; CPIM 96, MPIM

Connecting Systems CPM 88, MeYu Languagers Supported Codor Forters, Steel, Fred C. Option Forters, Steel, Fred C. Option Forters, Steel, Fred C. Option Maximum Marrier, M. Dynn Maximum CPM 1997 Marrier Maximum CPM 1997 Marrier Commission Profession Commission Code 1997 Marrier Marrier Code 1997 Marrier Marrier Code 1997 Marrier Marrier Intelligence Code Marrier Marrier Marrier Inc. Names 1997 Marrier Marrier Inc. Names 1997 Marrier Inc. Names 1997 Marrier Inc. Names 1997 Marrier Inc.

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AMP LOGIC SCIENCES, INC.
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MARY LOGIC SCIENCES, INC.
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MARY LOGIC SCIENCES

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The TeleVideo Personal Computer. Not the first. Just the best.



• Televideo Systems, Inc.

COMP EDIT 319
Moro Application Discrete
Programme Common
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Die First installed: 1977
Gibe Vinder Forde (1972
Ade HETERIKATIONAL, MCC.
CORFIDERT 1911
Begericht Appliedung: Description (1972
Gestelle) System (1974
Begericht Appliedung: Description (1974
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Manipus Lobert 1974
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Begericht (1974
Begericht (19

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And BETTERNA TOORAL, BECC.

And BETTERNA TOORAL, BECC.

BOOK (C) CO. 100

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COMPICION SOON
Specific Application: Encirone
Typerating
Specific Application: Circle
Operating Street.
Circle
Street.
Specific Springs.
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plication Electronic

Word Length: 8-bit Operating Systems: Discontiny Operating Systems: 1988 Lytin Measures Memory: 512K Tytin Measures Hornory: 512K Tytin Measures Ho Protice: Corestuncations Profunction: Anytchronous Empirication: Anytchronous Empirication: President Sales Terres: Purchase. Purchase Force: 519 990 to 537 COO Measuremones: Choice Operating Systems: 1980 to 537 COO Measuremones: Choice Operating Systems: 1980 to 537 COO Measuremones: Choice Oper Prest Invasible: 1980

Manningson, On-16.

And TERRATOMAL, INC.

Amening Machanismo Pere, 197.

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AND COMPATION TO STEMM

Specific Application. Electronic

General Application. Electronic

Compating System. Proporatory.

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bytes
Masterum I/O Puris 6
Communications Protocols.
Asynchronous
Disorbytisms: End user
Vender Sales Terms: Purchase,
Lunce
Purchase Price; STA

Control (Control (Con

Commoncations Protocols: Applications: End user Verside Select Terms: Purchase. Losse Purchase Price: \$30,000 Maintenance: Third-party Average Maintenance Fee: \$70 Date First Installed: Octoor: 1981 Mustade Installed: Debte: 25 * Additional information provided for by vendor The Nucleus 6000 is a medium multiprocessor protein for by vendor the Nucleus 6000 is a medium multiprocessor postele evidence which opening exchange which opening on his function node in public data makes in the nucleus of the nuc

Date First Instantion Control 1981
Anticolocida N V STIME, INC.
Anticolocida N V STIME, INC. ANTEL SYSTEMS CORP.

MODEL STATE OF STA ANDROMEDA SYSTEMS, INC.

Micro Word Langth: 16-bit Operating System: LINEX, SX, RSX-1144 15M Languages Busported Forton Description Parks 2, Paccard Minimum Memory, 20X Dytes Mauginary Memory, 464 Dytes Maugineur Yes, 20X Minimum Ort. Line Storage; 10M Dytes

(Sie Verdiz Profile Page V-2)

ANTEL STETME CORP.

RESERVERS IL LEVEL I

Moro
Specific Application: Electronic
Word Length 8-bit
Operating Specimer Proportiary
Melocarum Memory, 2000 Cytes
Resimum Memory, 2000 Cytes
Resimum Cit-Liva Storage, 540
Vytes
Massimum (Or Fund City
Melocarum (Or Fund Oyen Dynes Of Control of Control

11M
Micro
Ward Leegth: 16-01
Operating Systems LHXX, TSK+;
RSX-13M
Languages Supported Forum,
Basic Daco Dax 2, Pascel
Maximum Memory, 28K Dyles
Maximum Memory, 18K Dyles
Maximum Ce-Line Storage: 160M
Maximum Ce-Line Storage: 160M

Multiple Users Yes, 10
Manimum Chair Strenge 160M
bytes
Maximum IO Peris: 18
Maximum IO Peris: 18
Maximum IO Peris: 19
Maximum IO Peris: 19
Maximum IO Peris: 19
Maximum IO Maxi

ANDROTEK/DMI RIGEL II	Mentenance: Return to manufacturing facility. Third-party	Communications Protocols: Asynchronous, Baynchronous,	APPLIED TECHNOLOGY VENTURES, INC.
Moro Specific Application: Motor Testing		SOLCISMA	Micro
	APPLE COMPUTER, INC.	Distribution: End user; Third-party Vendor Sales Terms; Purchase.	Operating System: JACQUAN Languages Supported: Basic, Assembly Minimum Memory: 128K byte Maximum Memory: 512K byte
	Desiston	Lease	Languages Supported: Basic,
Operating System: CPMI Languages Bupported: Cobol, Fortren Beac Minimum Memory: 45K bytes Manimum Memory: 64K bytes Manimum Memory: 64K bytes Manimum Memory: 64K bytes	Word Length: 18-bt	Purchase Price: \$3,000 to \$10,000	Assembly
Marine Manage 457 have	Operating System: DOS	Maintenance: Return to. manufacturing facility	Manufacts Manuary: 1269, Dyle-
Maximum Memory: 64K bytes	Languages Supported Basic. Pascal Assembler	Outo First Installed: 1981 Number Installed to Date: 100	Multiple Users: Yes: 12 Meximum On-Line Storage: 3
Multiple Users: No Meximum On-Line Storage: 1.2M		Number Installed to Date: 100	Meximum On-Line Storage: 3
Maximum On-Line Storage: 1.2M	Multiple Users: No Maximum On-Line Storage: SM	(See Vendor Profile Page-V-2)	Communications Protocols
bytes Meximum I/O Ports: 9	hors		Assectionous Synchronous
	Maximum I/O Ports: 6	APPLIED SYSTEMS CORP.	
Asynchronous, RS-232	Communications Protocols:	ASC 96 Supermorp	Distribution: End user Yondor Sales Terms: Purchas Purchase Price: \$12,000 to \$1
Distribution: End user Vender Sales Terms: Purchase Purchase Price: \$20,000 to \$50,000	Asynchronous, Bisynchronous	Septific Application Control	Purchase Price: \$12,000 to \$1
Purchase Price: \$20,000 to \$50,000	Distribution: End user Third-party Vendor Sales Terres: Purchase Purchase Price: \$2,995	Specific Application: Graphics Word Langth: 16/32-bit Operating System: APPM 86, UNIX QASIS	Maintenance: On-sin Date First Installed: June 197: Number Installed to Date: 2.5
Maintenance: On-site, Remote dagnostics. Return to manufacturing	Purchase Price: \$9.995	Operating System: APPM 56, UNIX.	Date First Installed: June 197:
	Maintenance: RCA Corp Date First Installed: 1953	DASIS	Number Installed to Date: 2.5
Date First installed: 1980 Number installed to Date: 100 —	CAM FOR HOUSES 1963	Languages Supported: Cottol. Fortran, Basic, Pascul. C., Assembler Manham Memory: SAR bytes Masseum Memory: 1M bytes Multiple Users: Yes. 15 Masseum On-Line Storage: 2008	APPLIED TECHNOLOGY
Number Installed to Date: 100 -	APPLIED DIGITAL BATA	Minimum Memory: 64K bytes	VENTURES, INC.
(See Vendor Profile Page V-2)		Measurem Memory: 1M bytos	JS60 Micro
(See versus required ruly (12)	MULTIVISION	Maximum On-Line Storage 20054	Operation Brother JACOLING
APPLE COMPUTER, INC.	Desktop		Operating Bystem: JACQUARE Languages Supported: Basic
	Operation System: CPM	Meximum I/O Ports: 32 Communications Protocols:	Assembly
Desktop .	Word Langth, 9-bit Operating System: CP-M Languages Supported: Basic	Asynchronous, Beynchronous	Maximum Manager 128K bytes
Operation System (ICC) 1.1	Minimum Memory: 48K bytes Marinan De-Line Storage: 700K		Assembly Memory: 128K byter Meximum Memory: 128K byter Multiple Users: No Maximum On-Line Storage: 4
Languages Supported: Fortran.	Maximum Ond ins Stormer 7000	Detribution End user Third-party - Vander Sales Terms, Purchase	Maximum On-Line Storage: 4
Basic, Pancal, CPIM, Linp		Vander Sales Terres: Purchase.	Communications Protocols.
Desiring West Langth: 6-bit Operating System: DOS 3 3 Languages Supported: Fortrar, Basic, Plancal: OFM, Ling Steinbern Memory; 64K bytes Stutten Users: No	Maximum I/O Ports: 4		
Communications Protocols:	Communications Protocols: Asynchronous, Synchronous	Maintenance: Return to	
	Distribution: Third-party Vendor Sales Terms: Purchase Purchase Price: \$3,395	Montenance: Return to manufacturing fastiry. Third-perty Date First tretailed: 1982 Number Installed to Date: 100 —	Beyndronous Distribution: End user Vender Sales Terms: Purchas Purchase Price: \$12,000 to \$7 Mantanance: On-site
Distribution: Third-party	Vendor Sales Terms: Purchase	Number Installed to Date: 100 -	Durchase Stice: \$12,000 to \$7
Distribution: Third-party Vendor Sales Terms: Purchase Purchase Price: \$1,395	Purchase Price: \$3,005	500	Marrianance: Criste
	Mentenence: NCR, Corp Date First Installed: 1980 (See Vendor Profile Page V-2)		Marriagence: On-sile Date First Installed: June 1971 Number Installed to Date: 2.3
manufacturing facility: Third-party (See Vendor Profile Page V-2)	(See Vendor Profile Page V-2)	APPLIED TECHNOLOGY VENTURES, INC.	Number Installed to Date: 2.3
(See Asupp. Light 1-30s 1-5)	The same of the sa	4900	APPLIED YECHNOLOGY
APPLE COMPUTER, INC.	APPLIED DYNAMICS .	Moro	VENTURES, INC.
APPLE II		Word Longth: S-bit Languages Supported: PL/1,	.600
Desisop		Assembly	Operating System: JACQUAR
Desktop Werd Length: 8-bit Operating System: SOS, CP/M Languages Bupperted: Basic, Pascal, CP/M: Assembler Minimum Mammer; 13/K: Invies	Specific Application: Modeling	Minimum Memory: 64K bytes Maximum Memory: 320K bytes Multiple Users: Yes	Marri Operating System: JACOUAR Languages Supported: Store: Assembly
Languages Bupported: Basic.	Word Legate Stor	Maximum Mercery: 320K bytes	Assertely
Pascal CPM: Assentier	Word Length: 5-bit Languages Supported: MPS 10 Minimum Memory: 364K bytes Meximum Memory: 2M bytes	Communications Protocols:	Assembly Memory: 125K byte: Meximum Memory: 125K byte: Multiple Users: Yes. 3 Meximum Co-Line Storage: 4
Minimum Memory: 128K bytes Multiple Users: No Maximum On-Line Storage: 550K	Minimum Memory: 384K bytes		Multiple Users: Yes, 3
Maximum On-Line Storage: SECK	Multiple Upper Yes	Desribution: End user Vendor Sales Terms: Purchase.	Maximum On-Line Storage: 4 bytes
	Muhipia Usere: Yes Maximum IIO Ports: 258	Pertal Lases Process Frice: \$6,000 to \$33,000 Menterance: On site, Return to	Constructions Protects
Maximum I/O Ports: 10 Communications Protocols:	Communications Protocols:	Purchase Price: \$5,000 to \$33 000	Combanications Protecols: Asynchronous Synchronous. Beynchronous Distribution: End user
Contractorous, Synchronous Distribution: There pady Vender Sales Terms: Purchase Purchase Price: \$2,905 to \$3,495	Asynchronous Distribution: End user	Maintenance: On site. Return to	Bayrchronous
Distribution: Therd-party	Vender Sales Terms: Purchase Purchase Price: \$200,000 to	Transferring facility	Distribution: End user Vander Sales Terres: Purchase Purchase Price: \$12,000 to \$7 Maintenance: On-site
Vender Sales Terms: Purchase	Purchase Price: \$200,000 to \$250,000	(See Vendor Prote Page V-2)	Purchase Price: \$12,000 to \$7
Maintenance: Server to	\$250,000		Memberance On ste
Maintenance: Return to manufacturing facility, RCA Date First Installed. November 1960 - Number Installed to Date: 10,000	Maintenance: On-sile Average Meintenance Fee: \$2,000 Date First Installed: 1977 Number Installed to Date: 100 (See Vendor Profile Page V-2)	APPLIED TECHNOLOGY	Maintenance: On one Date First Installed: June 1971 Number Installed to Date: 230
Date First Installed, November 1960	Date First installed: 1977	YENTURES, INC. FOX 8 880/5100/5180	
- 50,000	Number Installed to Date: 100	More	ARC AUTOMATION BERYS
	(See Aurer Line) Lafe Lin)	Operating System CPIM	ARC MICRO PAC & SINGLE
APPLE COMPUTER, INC.	APPLIED SYSTEMS CORP.	Operating System CPM Languages Supported Cobot. Fortran, Basic, Paccal Milestram Memory: 80K bytes Maximum Memory: 80K bytes	
INFORMATION ANALYST	ASC/80	Minimum Memory: BOK bytes	Word Longit: To S-bit
Personal Word Langite 8-bit	Micro	Maximum Memory: 80K bytes Multiple Users: No Maximum On-Line Sterage: 16M	Operating System CPM 22.
Operating Sestem: SOS	Specific Application: Graphics, Communications	Maximum On-Line Sterage: 16M	Maximum Memory: 2565 bytes
Languages Supported: Portrar;	Communications World Langth: 8/15-bit Operating System: CP/M, CP/M 86: DOS	byses	Ward Length: To 6-bit Operating System: CPIM 2.2. Minimum Memory: 64K bytes Maximum Memory: 256K bytes Multiple Users. No Maximum On-Line Storage: 5
Seec. Pascel. Assertior. Applesoft	Operating System: CP/M, CP/M 88	Communications Protecols: RS- 232C	Maximum On-Line Storage: 5 bytes
Maddede Usaara, No.	Language Supported City		
Operating System: SOS Languages Supported: Portrat; Seato, Pascol, Assembler, Applesoft Minimum Memory: 128K bytes Multiple Users. No Measures On-Line Steamer: 560K	Languages Supported: Cópic. Fortrer, Besic, Fascal, C. Alasarchier Mindman Memory: 10th bytes Mosteram Memory: 500K bytes Mosteram Memory: 500K bytes Mustigle Users: Yes, E Mustigle Users: Yes, E	Distribution: End user Yonder Bales Terms: Purchase Purchase Price: \$7,500 to \$18,000 Maintenance: On-set. Return to marviatorizing Stotly Average Maintenance Fee: \$120 Date First Issassine! December 1960	Communications Protectic Asynchronous, Synchronous Destribution: Third-party Vender Sales Terms: Purchase Maintenance: Return to many dark once leader
bytes Communications Protocols:	Minimum Memory: 16K bytes	Purchase Price: \$7,500 to \$18,000	Asynchronous, Synchronous
Attractorous	Muhisia Usarri Yen B	menufacturing facety	Vander Sales Terms, Purchase
Asynchronous Dietribution: Thro-party Vendor Sales Terms, Purchase	Meximum On-Line Storage: 10004	Average Muntenance Fee: \$120	Maintenance: Petury to

Vendor Profile Cone V.C. 2 MCRO-PAC I MULTI profit Length: Tri 8-bit testing dysteen: MPNH II testam Merony: 56% bytes terson Merony: 256% bytes testam Mortog: 256% bytes testam On-Line Storage: 3 2M SOO
ARCHIVES, INC.
ARCHIVES, INC.
ARCHIVES, INC.
COMMON
COMMON
Werel Langth: 5-bit
Coperating System Child
Languages Supported Cobol,
Languages Supported Cobol,
Residence Memory 64K Cytes
Maximum Memory 64K Cytes
Archives Memory 64K Hampit: Tin 8-bit string Bystons: CP-IM-2 2 man Moment; SSK bytos man Moment; SSK bytos man Moment; No man Moment; No man Strings: 1 6M Control Popularia Control Popu

mount UV Peris; 4
mount UV Peris; 4
mountailore Prescele:
chronous, Synchronous
fluster: Throp-party
for Sales Termis: Purchase
flessance: Reburn to
fleckung facility
Peris Installed: January 1902
Peris Installed: January 1902 Maximus On-Lipe Stronge: 10st byte: Dyte: Maximus I/O Perier 3 Communications Prebooks: Asynchronous, Synchronous Distribution: Distribution: Distribution: Purchase Premise Premise Produces Planches Principal Sci 55 06 10 56.500 Marchanismost: They destruct the Communication of t INC. ARC MICRO/PAC II MULTI BICHOIPAG II BULTI PLangth: Tn 6-bit string Systems MP-IM II norm Memory: 64K byton mum Memory: 256K byton gib Users: Yao mum On-Line Blorage: 11.6M

man Dir-Line Minegat

man IUP Peris: 4
manistations Proteoris;
chenous, Synchronous
fluster, Throparty
for Ballet Terms; Purchase
femance, Reium to
userum placity
Finel Installate, January 1562
boy Installed to Date: 100 —

gift: Tri S-bit System: ASPIM 9 Mormory: 64K bytes Mormory: 256K bytes more: Yes On-Line Storage: 21-5M um t/O Ports: 3

Reactife Application Control System System System Market Length 6-20 Med Asserted Memory Memory Self-System Asserted Memory Self-System Memory Self-System Memory Self-System Memory Self-System Memory Self-System Self-Syste Desking Specific Application: Process Specific Application: Process Specific Application: Process World Languages Suppressed Assemble Market Process (1987) 1988 (Specific Applications) 1988 (Specific Applications)

manufacturing facility
(See Vendor Profile Page V-3) Vendor Sales Terms: Purchase. Lesse Purchase Price: \$3,000 to \$4,000 Maintenance: On-sie: Return to manufactures bardes. Under York Gestalent, Dicerton 1. 1986

WYSHIN COMP.

A YCON 198

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Well Langer 1094

Torre 1094

Torre

hase Price: \$9,000 to \$14,000 tenence: Return to	Communecations Protocols:	Distribution: CEM. Third-party	Maximum I/O Ports: 2
facturing facility	Asynctronous	Yender Sales Terres: Purchase	Communications Protocols:
First Installed March 1981	Distribution: Third-party	Meintenance/ITT, Couler	Proprietary
Vendor Profile Page V-30	Yendor Sales Terms: Purchase	Average Maintenance Fee: \$50	Distribution: Third-party
render Friday Prop	Purchase Price: \$10 000 to \$22,000	Date First Installed August 1962	Vender Sales Terms: Purchase
R BROWN RESEARCH	Maintenance: Thirs-party	Rumber Installed In Date (100	Purchase Price: \$4,000 to \$7 4
N BROWN NESEARCH	Date First Installed, September	500	Maintenance: Return to
	1982	Gee Vendor Profile Page V-0	manufacturing facility
	(See Vendor Profile Page V-3)	(See years) Links Lake and	Number Installed to Date: 100 -
		CALLAN DATA SYSTEMS	500
Longth: 8-bit	CADO SYSTEMS CORP.	IBMSTAR 200	
ueges Supported: Bosic num Mercery: 64K bytes	SYSTEM 20/24	Supermicro	CARDKEY SYSTEMS
	More	Word Length: 32-bit	01000
mum Memory: 64K bytes nie Users: No	Word Longth: 8-txt	Operating System: UNIX	Mon
mum On-Line Storage: 136K	Operating System CADO	Languages Supported: Cobol.	Specific Application: Access
	Languages Supported Cotol	Fortran, Besic, Peacel C. Ade	Control
	Minimum Memory: 45K bytes	Minimum Memory 512X bytes	Word Langth: 8-bit
mum I/O Ports: 5	Maximum Memory: 48K bytes	Multiple Users: Yes, 4	Operating Besters: Proprietary
runications Protocols:	Stuttiple Users: Yet, 4	Maximum On-Line Storage: 21M	Minimum Morrory: 32K bytes
	Maximum On-Line Storage: 104M	Index	Maximum Memory: 46K bytes
Bullion: End year	bytes	Maximum I/O Ports: 4	Multiple Usery, Yes
or Sales Terms: Purchase	Communications Protocols:		Maximum I/O Porte: 2
tese Price: \$10,000 to \$15,000	Asynchronous	Communications Protocols:	
lenence: Fletum to	Distribution: Third-party	Asynchronous, Baynchronous, X 25,	
facturing facility	Yender Sales Terms: Purchase	Ethernet	Distribution: End user, Third-par
First Installed: January 1980	Purchase Price: \$15,000 to \$29,000	Distribution: OEM: Third-party	
	Maintenance: Third-corty	Yendor Sales Terms: Purchase	
R BROWN RESEARCH	Date First Installed: May 1980	Purchase Price: \$13,950	Maintenance: On site. Return to
		Maintenance: ITT: Courter	manufacturing facility
	CADO SYSTEMS CORP.	Average Maintenance Fee: \$110	Average Maintenance Fee: \$10
	SYSTEM 20/20	Date First Installed: March 1963	Number Installed to Date: 100 -
Longth: 5-brt	Mrm.		500
oting System UCSO-P	Word Length S.Or	CANON U.S.A., INC.	
unges Buscorted Pascal	Operating System; CADO	AS-100	CARREST SYSTEMS
num Merrory felk tyres		Micro	DIZOS
rum Morsery: 64K bytes	Languages Bupported Coppl	Word Langth: 16-bst	Mem
ple Users: No	Minimum Mernery: 96K bytes	Operating System: CPIM 86, MS-	
mam On-Line Storage: 645K	Maximum Mornery: 96K bytes	DOS, OASIS 18	Specific Application: Access
	Multiple Users: Yes, 6		Control
mam I/O Ports: 5	Maximum On-Line Storage: 104M	Besc	Word Longth: 8-bit
mant DO Perte: 6	bytes	Niceman Memory: 128K bytes	Operating Bystom: Proprietary
Pronous	Communications Protocols:		Maximum Memory: 30% bytes Meximum Memory: 45% bytes
Brotion; End uppr	Asynchronout	Multiple Usery: Yos, 4	
or Sales Terre: Purchase	Distribution: Third-party	Maximum On-Line Storage: 10M	Multiple Geers: Yes
hase Price: \$12,000 to \$18,000	Vender Bales Terre: Purchase	bytes	Maximum I/O Ports: 2
tenence: Return to	Purchase Price: \$30,000 to \$45,000	Mestrum I/O Ports: 3	Communications Protocols:
	Maintenance: Third-party	Olatribution: Third-carty	Proprietary
facturing facility First Installed Acril 1981	Date First Installed: May 1980	Vendor Sales Terms: Purchase	Distribution: End user: Third-par
	Number Installed to Date: 100 -	Purchase Price: \$3,000 to \$5,000	Vender Sales Terms: Purchase
	500	Maintenance: Distributors	Purchase Price: \$5,000
LINC, INC.		Date First Installed: March 1903	Meintenance: On-site, Return to
TATION	CADO SYSTEMS CORP.	Number Installed to Date: Less than	menutecturing facility
seering Workstellon			
			Number Installed to Date: 100 -
Longth: 30-bit	Word Length: 16-pc	,	500
		CARGKEY SYSTEMS	
		1010	CARRIED SYSTEMS
mum Mornano 364 bytes		Merro	D1500
mum Mornery: 3M bytes sle Users: No	Multiple Users: Yes	Besoffic Application: Access	Meren
man On-Line Storage: 12.5M	Meximum On-Line Storage: 1.1G	Control	Specific Application: Access

Number Invisited to Date: 50 -100 (See Vendor Profile Page V-3)

Appropriate Approp

nee Price: \$46,500 mance: On-sie, Return to schurng lacilty se Maintenance Pee: \$1,000

Operating Bysters: CA-SASIC Meliminum Memory! 10K Gylen Mautenum Memory: 64K Gylen Mautenum Memory: 64K Gylen Mautenum I/O Prote 2 Destillation: 5rd user Vendor Balen Tarms: Parthase Prachase Protein S3,500 Maintenance: On site (See Vendor Protein Page V-4)

Parchase Prior: \$2,000
GENTHAL DAYA GONEA
GENTHAL DAYA GONEA
GONEATIZE
Doubling
Were Limits 16-60
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Residence Mere 2056 bytes
Residence M

Asynchronous, Synchronous, Bisynchronous, Bisynchronous, Cleinfibution: Third-party, Cleinfibution: Third-party, Lesen Parchase, Lesen Parchase Price: \$15,000 to \$20,000 Mantervanous Indoors' Avenue Sentimentonico Fee: \$150 Date Free Free Sentimentonico Fee: \$150 Date Free Free Sentimentonico Fee: \$150 Date Free Free Sentimentonico Fee: \$150 Date Free Free Sentime

(See Visido Profe Page Vol.
GENTRAL BATA GORP.
COMPATUS.
Word Langle: 16-90
Gentling System: UNIX. PSX-11;
FT-11; PSX-15
Hord Langle: 16-90
Gentling System: UNIX. PSX-11;
FT-11; PSX-15
Gentling System: UNIX. PSX-11;
FT-12; PSX-15
Gentling System: UNIX. PSX-11;
FT-12; PSX-15
Gentling System: UNIX. PSX-11;
FT-12; PSX-15
Gentling System: UNIX. PSX-15
G

on Con-Line Storage: 7M

Langth: 6-bit

Maximum On-Line Storage: 7M bytos Maximum NO Ports: 2 Communications Protocols: Synchronous, Beynchronous Distributions CPA, Thru) party Vender Sales Terms: Purchase Protocols: 52:995 to \$7:905 Membersone On-ste Average Matrimonion Fee: 500 Date First Installed: May 1962

CMC INTERNATIONAL

internation-Line Biomaga: 700K; 3 Internation Protection: Invariant Biometric Protections: Protection, Essynthronous shottler: Other Trends-party feer Easier Terrats: Purchase-hases Princer \$3,000 to \$6,000 ferrance: On-site rage Maintenance Peer \$500 | First Invalided May 1960 bow Heatifield to Date: 3,000 od Longth: S-bit erafing System: CPIA: TLERED unges Supported, Colod av, Basse, Pascar, APL, PL/1, C mun Memory: 64K bytes mun Memory: 64K bytes ple Users, No mun On-Line Storage: 1,5M itman (In Peris: 2 itman (In Peris: 2 itman (In Peris: 2 itman (In Peris: 2 itman). The International itmanus. Separatronus itmanus. Separatronus itmanus. Separatronus der Sales Terres: Purchase triasa Price: \$2,965.0 \$7,005 itmanus. On-site may Merianana. Per: \$40 In Pint Insealand. May 1982. ATA SYSTEMS CORP. Nord Langth: 16-bit Horel Langth: 16-bit Horeling System: UNX anguages Supported: Cobol. Comer. Bean plus. Places. APL, Solinuas Semeny: 320K bytes fastimum Memory: 134 bytes Anglie Users: Ves. 17 Sastimum On Line Storage: 64M num I/O Porte: 17 half to Phen.
ha First Installed: February 1983 her installed to Date: 100 e Vendor Profile Page V-4)

CODEX CORP.
CDX-28121
Destrop
Specific Application: Word
Processing
Word Length: 8-bit
Languages Supported: Cobot
Languages Supported: Cobot Operating System: ISIOS Languages Bupported: Cobol Basic Minimum Memory: 192K bytes Maximum Memory: 354K bytes Maximum Memory: 354K bytes Maximum On-Line Storage; SON unications Protocols; ronous, 3270, SNA ution: End user r Sales Terms; Purchase.

Dishbution and user Vendor Sales Tems: Purchase, Linate Purchase Price: \$6,995 to \$10,000 Mantenance: On sits Average Maintenance Fee: \$100 Date Pirst Installed: May 1983 (See Vendor Profile Page V-4) (See Vendor Protile Page V-4)
CODEX CORP.
CODEX CORP.
COX.35479
Co c mum Memory: 192K bytes imum Memory: 384K bytes ipte Users: Yes, 4 mm Pin-Line Storage: 4M

Dete First Installed: 1992
CODEX CORP.
COX.-198.44
Deal-log Weet Language Index
Weet Language Index
Weet Language Index
Weet Language Index
Languages Index
La

Vendor Sales Terres: Purchase. Lease Purchase Price: \$12,995 to \$18,000 Maintenance: On ate Average Maintenance Pea: \$135 Oate First Installed: September Micro Word Langth: 16-bit Operating System MS-DOS, Chin, PC-DOS PC-DG Mitrimum Namery: 162K bytes Mitriple Users: Yes, 4 Masimum On-Line Storage: 20M bytes Communications Prolocels: Ethernel Betrievider: OEM Vender Sales Terms: Purchase

Vendor Profile Page V-61

Purchase Prior: \$1,150 Maintenance: Return to manufacturing land: Date Print Installed: August 1963 /See Vendor Profile Page V-6) Cide Vendor Prottle Plage V-4)

COLOMIAL DATA SERVICES

COLOMIAL DATA SERVICES

SERVIL

More

More Length: Fox

Operating System: MILITIMIT

Operating System: MILITIMIT

Ministers Memory: SSK Types

Maximum Memory: SSK Types

Maximum Memory: SSK Types

Ministers Vin Length: Some Total

Digital States: Tex. 4

Digital States: Tex. 4

Digital States: Tex. 4

ord Langth: 8-bit nerating System: CPM 2.2 nguispes Supported: Cobol. 17-ar: Bainc, Pascal ninnam Mennery; 64K bytes somew Mennery; 64K bytes Note Manual Comments of the somework on Line Storage: 2.444 Meastware On-Line Blomage: 104M tytes Meastware 1/0 Perts: 10 Communications Protocols: Approximately Bellyshrinanas. SUC Destination: End user Vendor Sales Terms: Purchase Punchase Pices IA, 400 is \$22,000 Maintenance: On site (New Yorks Protoch Page V-4)

COLLISIONED DATA PROGRESSIONED TO THE PROGRESSIONED eximum On-Line Storage: 1 8M-rise author 1/O Portic 7 eximum 1/O Portic 7 professional Professional synchronous, Synchronous exhibitation: They surry under Sales Termin Purchase archase Pricis 54,000 altrianamos: O-atis, Return to enviacturing facility to Piral Intelliger. September

COLUMBA AATA PRODUCTS, DIC.
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A new era dawns on the datascape:

Envision the detascape" of the future:

Detabese Herdware
 High Speed Wincheste

 High Speed Winchester control

in one bold stroke, Cogent hes solved the problem of simultaneous distributed data access in natworked PC

As a Winchester Centraller, the Detabase Machine is optimized for high speed intelligent control and trans-



As a deta base co-processor, the Detabase Machine** imple ments hardware versions of existing detabase software in high apeed multi-user environments.

In a networked environment, the Database Machine" man ages multi-user accese to th



IBM-PC* plug competible
 8 Mhz 80186 co-process

LSi Winchester control
 Imbedded detabase silic

64 K high speed
 triple ported buffer

cogent

butter: The Serty have Price: \$555 tenance: Return to facturing facility. TRW, Inc. First Intellett. August 1982 Vendor Profile Page V-5)

invalications Protocols: chronous butien: Thro-party or Bales Terms: Furchase latence: Return to facturing facility, Thro-party

Vendor Sales Terms: Purchase, Lasse Purchase Price, \$1,995 Maintenance: Return to marulachumg taolet, TRW, inc Date First Intended: July 1961 Number Installed to Date: 10,000 — 50,000

Number demande o Dass 1100-20

COMMISSION STATES INC.

COMMISSION STATES INC.

CO 20

Design States INC.

COMPAL COMPATER
PORTER
PORTER Hasimum On-Line Storage: 640k bytes. Maximum I/O Parts: 3 Communications Protecols: Asynchronous Deathpusee: Third Survey Vendor Sales Terms: Purchase Purchase Price: \$2,995 Date First Installed: January 1983 (See Vendor Profile Page V-S)

Date Felt Auditable, January 1906

COURT PLOCATION

ELECTRIC PLOCA

modelle besided in Delet (200)
COMMA CORRESTOR
ENTERED, INC.
ENTERED, I A contract of the contract of

Meaninum On-Lies Stonage: 15M bytes Meaninum NO Ports: 60 Commenciations Prolocols: Bisynchronous Bisynchronous Distribution: Erd uter Vendor Sales Tannis: Purchase Purchase Price: 55 655 to 58,955 Maintenance: On-Site Dels First Installated. Murch 1850 Maintenance: Solid Sales 200 Maintenance: Col-Site Dels First Installated to Dels: 200 Number Installed to Date: 200
COMPAQ COMPUTER CORP.
COMPAQ COMPUTER CORP.
COMPAQ World Langth: 16-bit
World Langth: 16-bit
Operating System: OPM 56. T
SYSTEM, MSO, TOTAL
Languages Supported Cobot,
Forum, Static, Forum, 2004
Microsom Memory; 2004 Cyptes
Microsom Memory; 2004 Cyptes
Microsom Memory; 2004 Cyptes
Microsom Memory; 2004 Cyptes
Microsom On-Line Storage: 640X
prins.

Communications Protectors: Asystomorus Destination: Third-party Vender Bales Terms: Furchase Parchase Price: 5600 to \$1,150 Maintenance: On-site Date Pirst Intended: Jenuary 1981 Mamber Installed: Jenuary 1981 Mamber Installed to Date: 700

Length: 16-bit man Memory: 150 bytes man Memory: 32K bytes pie Users: No man I/O Perts: 30 munications Prosocols: chronous butter: Thirdparty to Sales.

COMPUPRO CORP.	Word Longth 6-bit Minimum Mornery 16K bytes Maximum Mornery 32K bytes	Maximum Manney 72V Jules	CONVENCENT
ATALA	Minimum Memory 16K bytes	Meximum Monory: 32K bytes Multiple Uppers: No Maximum On-Line Storage: 16CM	TECHNOLOGIES, INC. AWS COLOR GRAPHIC
Desirion	Maximum Marrage 32% bytes	Maximum On-Line Storage: 160M	AWS COLOR GRAPHIC
		bytes	More
		bytes Meximum I/O Peris: 1	Specific Application: Oraphics
Languages Supported: Cotol. Basic, PL/1 Minimum Memory: 125K bytes Maximum Memory: 1M bytes	Maximum I/O Ports: 1 Communications Protocols:		Morro Specific Application: Original World Length: 18-bit Operating System: CTOS Languages Supported: CXXXI Fortun See, Placed Assembler Market Memory: 515K bytes Masterum Co-Line Storage: 16M
Basic, PL/1	Manusum I/O Perts: 1	Asynchronous	Operating Systems C102
Miremum Memory: 125K bytes	Communications Protocols: Asynchronous	Distribution: Third-party Purchase Price: \$4,495 to \$4,595	Cartery Bases Description
Multiple Users: No	Distribution: End user	Maintenance: On-site, Return to manufacturing facility. Third-party Date First installed: June 1981 Number installed in Date: 100 —	Manager Manager 25600 Inches
Communications Protocols:		manufactures facility: Third-centy	Maximum Memory: 512K bytes
	Date First Installed: June 1961 Number Installed to Date: 100 —	Date First installed: June 1981	Multiple Users: Yes 16
Vender Sales Terms, Purchase Purchase Price: \$5,465 to \$8,995	Number installed to Date: 100 —	Number installed to Date: 100 -	Maximum On-Line Storage: 1644
Vendor Sales Terms. Purchase		500	
Purchase Price: \$5,495 to \$8,995	(See Vendor Profile Page V-5) .	COMPUTER HARDWARE, INC.	
Maintenance: On site Date First installed: April 1982 (See Vendor Profile Page V-S)	COMPUTER HARDWARE, INC.	4131	Communications Protocole: Asynchronous, SDLC/SNA, 3270 FLE
One Menday Broke Page M.C.	4100A		R.F
	Micro	Word Length: 6-bit Minimum Memory: 16K bytes Maximum Memory: 32K bytes Multiple Users: No	Distribution: OEM Vendor Sales Terres: Furchase Purchase Price: \$11,000 to \$14,000 Maintenance: Resum to
COMPUPRO CORP.	Word Langth: 8-bit Minkmum Memory: 15K bytes Maximum Memory: 32K bytes	Minimum Memory: 16K bytes	Vender Sales Terres: Purchase
818/8	Minkrum Memory: 15K bytes	Maximum Memory: 32% bytes	Purchase Price: \$11,000 to \$14,000
Deskino	Maximum Memory: 32% bytes	Maximum On-Line Storage: 160M	Maintenance: Return to manufacturing facility. Third-party Date Pirst Installed: January 1983 (See Vendor Profile Page V-6)
Operating System CPTM, MPTM	Multiple Users: No Maximum On-Line Storage: 18064	Maximum On-Line Storage: 100M	Case Short Installant, Insurant 1997
Lamparages autorism Country I	delication Carried assessed 160m	Nazimam I/O Porte: 1	(See Heats: Brothe Base V.6)
Operating System: CPIM, MPIM Languages Supported: Cobol, PL/II; Forrar, Baoc, Palcol, Assembly Minimum Memory: 256K bytes Multiple Users: No	Maximum IIO Proter 1	Communications Protocols:	
Muticia Users: No	Maximum I/O Pode: 1 Communications Protocols:		TECHNOLOGIES, INC.
Communications Protectis:		Distribution: Trind-party	TECHNOLOGIES, INC.
Asynchronous, Synchronous	Distribution: Engluser	Vendor Sales Terms: Purchase	AWS TURBO
Distribution: End uper	Outributer: Engluser Vendor Sales Terms: Purchase Purchase Prior: \$1,750 to \$1,850 Stainterance: On-site, Return to	Purchase Price: \$4,995 to \$5,095	Desktop
Veriger Seres Terris: PUrchase	Purchase Prior: \$1,750 to \$1,800	Mantenance: On the Property to	Occupant Sustain CTOR :
Distribution: End user Vendor Sales Terms: Purchase Purchase Price: S0 565 Maintenance: On-site	Mannerance: Cri-sits, Helpin to	Asynchronous Destriction: Third-party Vendor Sales Terres. Purchase Process Price: \$4,995 to \$5,095 Maintenance. On-site. Recurs to manufacturing lacelity. Third-party Date First Installed Lessibled. June: 1951 Number Installed to Deter: 190 —	I monument Supported Coppet
Date First Installed: 1962	manufacturing facility. Third-party Date Pires Installact: June 1981 Number Installact to Date: 100 —	Number Installed to Date: 100 -	Fortran, Basic, Pascal, Assertition
	Number Installed to Date: 100	500	Minimum Memory: 256K bytes
COMPUTER	500		Maximum Memory: 512% bytes
COMMUNICATIONS		COMPUTER HARDWARE, INC.	Desktop Word Langtis: 16-bit Operating System: CTOS Languages Rasported: Oxfort Forter: Basic: Pascar, Assertate Marieram Resemp: 2506; bytes Mactimum Hermary: 5106; bytes Mactimum On-Line Storage: 16M Mactimum On-Line Storage: 16M
SPECIALISTS, INC.	COMPUTER HARDWARE, INC.	4106	Maximum On-Line Storage: 16M
TASK 1000	More	More Ass	Maximum UO Perte: 3
Micro Specific Application: Data	Wood I needly Sales	Languages Supported Codes	Communications Protection
Collection	Word Length: 8-bit Minimum Momeny: 16K bytes Maximum Memory: 32K bytes Multiple Upons: No	450E Morto Weet Length: B-bit Lenguages Supported: Cobol, Fortras, Pascel, C., Assember Sheimann Memory: 114 Dynos Maulimann Memory: 114 Dynos Maulimann Memory: 114 Dynos Maulimann Christian Stranger 1004 Dynos Dynos Dynos	Communications Protecets: Asynchronous, SCLC/SNA, 3270
	Maximum Momery 32K bytes	Manimum Memory: 64K bytes	RUE
Languages Supported: EDL Minimum Memory: 32K bytes Meximum Memory: 45K bytes	Multiple Users: No	Maximum Memory: 1M bytes	RUE Distribution: OEM Vender Sales Terms: Purchase Purchase Price: S4.500 to \$12,000 Reinfeaumer: Return to reanulactum; locality. OEM Dels Price Installed: November 1981 Namber Installed: November 1981
Minimum Memory: 32K bytes		Multiple Deers: Yes	Vender Seles Terms: Purchase
Meximum Memory: 46K bytes	bytes	Maximum On-Line Storage: 100M	Purchase Price: \$4,500 to \$12,000
Multiple Users: Yes Meximum I/O Peris: 7	Maximum I/O Ports: 1 Communications Protocols:	bia sircum I/O Ports: 16 Communications Protocols:	manufactures beatly (May
Communications Protocols:	Asynchronous	Communications Protocols:	Date Cost Installant Navarrier 1981
Asynchronous	Distribution First upper	Asynchronous, Synchronous, Beynchronous, SNA Destination End user, Third-party Vendor Sales Terms: Purchase.	Number installed to Date: 500 -
Aeyndromous Debritosiden: End user Vender Bales Termic Purchase Perches Brook St. 1955 to \$4.000 Maintenance Chi-disc Remote Caposides. Pekum to mexicaturing taoling, MST Corp. Dear Plant shoulded Debritos St. 1966 Marches testabled to Dene: 10 — 50 (San Vesdor Publis Page 1966).	Distribution: End user Vendor Sales Terms: Purchase Purchase Prices \$2,250 to \$2,350	Beynotypeous, SNA	1,000
Vender Sales Terres: Purchase	Purchase Price: \$2,250 to \$2,350	Distribution: End user, Third-party	A contraction
Purchase Price: \$1,995 to \$4,800		Vendor Sales Terms: Purchase.	TECHNOLOGIES, INC.
Maintenance: On-site: Remote	Date First Installed: June 1981 Number Installed to Date: 100 —	Loose Purchase Price: \$10,000 Steinterence: Or-ste, Return to manufacturing facility, Therd-party Date First Installed: 1981 Number installed to Date: 50 —	
facility MST Corp.	Mumber Installed to Date 100	Maintenance: On site Bell on to	Desitop Desitop Word Length: 16-bit Operating Bystem: CFOS Languages Buggerind: Cotox: Fortran, Bass, Pascel, Assemblar Bladmann Memory: 350K bytes Budges beening: 350K bytes Budges beening: 150 bytes Budges beening: 150K bytes Budges bytes
Date First Installed December 1990	500	manufacturing facility. Third-party	Word Longity: 16-bit
Number Installed to Date: 10 - 50	-	Opto First Installed: 1961 Number Installed to Date: 50	Operating Bysteric CTOS
(See Vendor Profile Page V-5)	COMPUTER HARDWARE, INC.	Number Installed to Date: 50 -	Languages Supported: Cotot:
	4111	100	Fortran, Basic, Pascel, Asserties
COMPUTER DEVICES, INC.	Moro	CONTEMPORARY CONTROL SYSTEMS, MC. SYSTEM 6000	Minimum Memory: 256K Cytes
	Wood Locathy & tot	SALLENDOWN COM LINGS	Multiple Union Ven 16
Ward I seetly 16.00	Specific Application: Time Clock. Word Langth: 3-bit Minimum Memory: 15% bytes Maximum Memory: 32% bytes Multiple Units: No Maximum Co-Line Storage: 160M Maximum Co-Line Storage: 160M	SYSTEM SCCO .	Maximum Co-Line Storage: 1.2G
Operating System: MS-DOS, CP/M	Maximum Memory: 32% bytes		bytes Maximum I/O Perts: 22
Languages Supported Cobot	Multiple Usets: No	Word Laught: 8-bit Operating System: CP/M Languages Supported: Cobol, Foriran, Basic, Beac plus, Pascal	Maximum I/O Perte: 22
Fortier, Beec	Maximum On-Live Storage: 16014	Operating System: CP/M	Communications Protocols:
Minimum Memory: 128K bytee	tyres	Carguages Supported: CCCC.	Charles Con
Madrida Hanny Yes 2	Maximum I/O Ports: 1 Constructions Protection		Vendor Sales Torres Purchase
Werd Langth: 18-bit Operating System: MS-DOB, CPM Languages Bapperisel Cobo: Fortrar, Danc Marimum Memory: 128K bytes Marimum Memory: 704K bytes Mattole Users: Yes. 2 Mattole Users: Yes. 2		Majorum Mamour BAX futes	Parettene Price: \$8,000 to \$20,000
TWOM.	Distribution: There-party	Maximum Memory: 125K bytes	Maintenance: Return to
Dyles Maximum I/O Parts: 2 Communications Protection	Asynchronous Distribution: Third-party Vender Sales Terms: Purchase Purchase Price: \$2,250 to \$2,360	Minimum Momeny: 84K byten Maximum Momeny: 128K byten Multiple Users: No Meximum On-Line Storage: 460K	Statement I/O Perfec 22 Commissionism Protection Commissionism Protection Commissionism Commissionism Protection Commissionism Protection Perfect 2000 to 200,000 Maintenance: Return 1 Perfect 25,000 Maint
	Purchase Price: \$2,295 to \$2,395	Maximum On-Line Storage: 480K	Date First metaned: October 1980
Asynchronous	Maintenance: On-site: Return to	bytes and the Bases of	Municipal measures to Date: 500 —
Chemistrees: Irand-party	manuscraring racitly. Third-party	Charles des CEM	1,000
Desripution: Third-party Vender Sales Torms: Purchase Purchase Price: \$2 905 to \$5,905 • Maintenance: Refurn to manufacturing facility (See Vendor Profile Plage V-S)	Maintenance: On-ete: Return to manufacturing facility. Third-party Date First installed: June 1981 Number Installed to Date: 100 —	tyrins Machinery (10 Pertis: 2 Destination: CEM Vender Sales Terms, Purchase Purchase Price, \$1,000 to \$6,000 Machinery Ring, 10 manufacturing facility Date Price; because 1981 Number metallied to Date: 50 — 100	CONVERGENT
Maintenance: Return to	-500 4	Purchase Price: \$4,000 to \$6,000	TECHNOLOGIES, INC.
manufacturing facility		Maintenance: Return to	MS GRAPHICS
(See Vendor Protte Page V-5)	COMPUTER HARDWARE, INC.	menufacturing facility	Moro
	4121	Date Park Instance: 1981	Specific Application; Graphics Word Langth: 16-bit Operating System: CTOS
COMPUTER HARDWARE, INC.	Mord Langth: 8-bit	100 Date: 50 -	Consider States Cities

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Fortran, Batter, Prescal: Assembler Minimum Memory: 2004: bytes Maximum Memory: 1M bytes Maximum Memory: 1M bytes Maximum On-Line Storage: 1.2G bytes Maximum 10 Parts: 22 Communications Protecols: 3270:	
R.E. SOLCOMA Distribution: OEM Yender Sales Terms: Purchase Purchase Princi 310,000 to \$22,000 Maintenance: Remote degressors Date First Installect October 1962	ш
COROMA DATA SYSTEMS, INC. COROMA PC-1 Desktop Word Langer: 16-ost	-
Operating System: MS-DOS, CP-IM- 89. Languages Supported: Cock: Fortive: Basic: Pascal, PU/I: C internen Memory: 129K bytes Maximum Memory: 129K bytes Maximum Ort-Line Storage: 200K bytes Maximum I/O Parts: 4	CALL TO THE PROPERTY OF THE PR
Communications Proteopts: Asynchronous Distribution: Third-party Vender Sales Terms: Purchase Purchase Price: \$2.55 Maintenance: Third-party (See Vender Profile Page V-d)	
BIG. CONONA PC-2 Destricts Word Langth: 15-bit Operating System: MS-DOS, CP/M 8	1
Languages Supported: Cobol. FOTER, State, Pascal, PL/1, C Statement Mannery: 120K bytes Maximum Mannery: 512K bytes Maximum Mannery: 512K bytes Maximum Co-Line Storage: 64CK	-
Oyen Maintenn (10 Pents: 4 Communications Protection: Asynchronous Distribution: Thirty garry Yender Salest Technic Purchase Price: \$2.995 Maintenance: Third party	
CORONA DATA SYSTEMS, INC. CORONA PC HD DWARD, Word Langth: 16-DR Operating Systems MS-DOG, CPM	
Languages Supported: Cobol. Forten, Bestie, Pacca: PLTI, C Blothman Memory: 126t bytes Masterum Memory: 512t bytes Masterum Memory: 512t bytes Masterum Co-Line Storage: 10M bytes.	
Maximum I/O Porte: 4 Communications Protocole: Asynchronous Development Protocole: Asynchronous Porte: S4.450 Makkinshee: Throboer Purchase Princ: S4.450 Makkinshee: Throboer	EG SEER
CORONA DATA SYSTEMS, MC. CORONA PORTABLE PPC1	0409

Portable World Langels: 16-bit Operating Systems: MS-DOS, CPIM eges Supported: Cobol.
Sanc: Pascal: PL1, C
on Mercery: 128K bytes
am Mercery: 512K bytes
am Mercery: 512K bytes
au Gerta: No
am On-Live Storage: 10M unications Protocors: noncus sulfor: Third-party ir Sales Terms: Purchase ass Price: \$2,395 snance: Third-party MA DATA STATEMS. MA PORTABLE PPCS Motion For Family PPCS Motion System: MS-DOS, CPIN Metion System: MS-DOS, CPIN gueges Supported: Cobot. Pan, Basib, Pacast, PLIT; C Innoch Marcory. 128t bytes invan Mercory. 512k bytes invan Mercory. 512k bytes invan Ge-Line Storage: 10M um L/O Porte: 3 unications Prospecie: moth: 16-bit ng System: COOS, CPIM.

innes I/O Ports: 10 maunications Protectol: notronous Bayrochronous Interference Interfere Date First Installed: June 1976 Number Installed to Date: 10,000 gifc 8:16 System: CROMEX-D s Supported: Cobot. src. Basic plus. Pancat C: wan On-Line Storage: 21M
man I/O Peris: 10
manications Proteocis:
Important Storage
in Select Territory
in gift: 8/16
Bystom: CROMEX D

- Supported: Cotol,
notc. Book: plus, Pracel;
C. C. Liet: Assembler
Blommy: 256K bytes
Marmory: 768K bytes remarkations Protocols, richronous Bayrofronous adharter: Ther-barry after Bales Terms: Purchase where Price 24,665 to \$15,000 instances Peturn to rulesharing facility. TRW, Inc.

Instituted OverLine Storage: 22M / First Instituted IO Partie: 10 Instituted IO Partie: 10 Instituted IO Partie: 10 Institution: The Open Institution: The Open Institution: The Open Institution: The Instituted Institution: The Instituted Institution: The Instituted Institution: Institution Institution: Institution Instituti CBIDSE
Micro
Word Langth: 8/18-bit
Operating System: CROMIX-D
Languages Supported: Cobb.
Fortran: Basic, Basic plan; Pascel.
PRG, C. Lao, Assembler
Microwant Macropy: 5/12 bytes
Masiatrum Memory: 11th Dytes
Masiatrum Memory: 11th Dytes
Masiatrum Ort-Line Storage: 1M or installed to Date: 100 astimum Cir-Line Storage: IM less astimum I/O Paris: II astimum I/O Paris: II provincia (Inspectivatoria institution Throughty andre Sales Terms: Purchase enthase Price: SA (46) to \$12,000 antenamence: Return to antifectumo facely. TRW, Inc., to Paris Invalided. September to Paris Invalidad. September According Bystem: CROAKX-O syndering Bystem: CROAKX-O syndering Bystem: CROAKX-O synders Buppoint Cobol, O'Mail, Delic, Benc plut, Pacol, IPG, C. Lao, Assember Bridman Mercery: 7566 bysis Business Newsyr: 756 bysis Business Newsyr: Yes Business Or-Line Borrege: 2594 Statimum Or-Line Borrege: 2594 er Installed to Date: 100 --Material State of the Communication of the Communic Word Length: 8/16-bit Operating Systems: CHOMEX-D Languages Supported Cobo; Fortran Basic Basic plus. Pascet C; CWI TERMINAL CORP.
1603
Destroy
Word Languit Bolt
Operating System: MOGS, HDOS;
Chill
Languingers S.

Purchase Price: \$27,495 to \$38,000 Maintenance: Return to manufacturing lacility, TRW, Inc. Data Clark Installant, June 1997

St Length: 8/15-bit stilling System: CRCMUK-O swages Supported: Cotol, in, Bettel Balic (bits, Pascal, C-Liso, Assembler swam Memory: 512K bytes mum Memory: 2M bytes job Ukerti, Yes mem Ort-Line Storage: 23M mem Ort-Line Storage: 23M

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community of the commun

Operating System: CROMEX-D Lariguages Supported: Cobol, Fortrail Basic, Basic plus, Pascul RPG, C. Lao, Assemble Minimum Memory: 14M bytes Maximum Memory: 15M bytes Maximum Con Line Storage: 22M Maximum Con Line Storage: 22M Maximum Con Line Storage: 22M

Maximum On-Line Storage: 22M Maximum I/O Prote: 30 Maximum I/O Maximum I/O

Des Peut hessisted. June 1953
CROMERSCO, 1902.
Microland September Coloxic
Microland September September 1903.
Microland September 19

Treatment On-Line Storage: 22M Dries Intelligence of the Communication of the Communication Protection Area of the Communication of t

Distribution: Third-party Vandor Sales Terms: Purchase Purchase Piron 18, 695 to \$16,000 Saintecanor, Return to marustraving tabley. TRW. Inc. Date First Instated: December 1982 Namber installed to Date: 100 — 500

Forter, Dissic Aspender Minimum Memory 1947 (yet of Minimum Memory 1947 (yet of Minimum 1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947) (1947)

Word Length: 8-bit Operating System: RCM MONITOR Languages Supported: RCM, Basic Maximum Memory: GMI System Multiple User: No Maximum On-Line Sterage: 1M System Destitution on Color Sterage: 1M System Destitution on Color Sterage: 1M System Parchase Price \$1,295 to \$5,000 Maintegrange: Resur, In-CWI TERMINAL CORP. 1505 Desirap Word Length: 5-bit Operating System MOOS, HOOS. imum On-Line procupus
Historic Thris-perty purchase
store Sales Termin Purchase
stress Price \$1,295 to \$5,000
intercents: Return to
substituting lacely, TRW, Inc.
to Price Installated, January 1980
inher Installated to Date: 500 —

Operating Bysiene MOOS, HODS, CPM Languages Begonized Cotol. Languages Begonized Cotol. Languages Begonized Cotol. Market Market Moose Cotol. Bedonized Bernory; Edit Dyles Basinson Morrison Bernory; Edit Dyles Basinson Morrison House, 160 may 160 market Morrison Cotol. Basinson MO Peric 3 Communications Protocole; Begonized Cotol. SCA Cotol. Bedonized MO Peric 3 Cotol. Bedonized Cotol. Peric Morrison Morr

37 mittop and Langith: 6-bit ----sting System: MDOG, HDOS.

Vendor Sales Terms: Purchase Purchase Price: \$2,500 to \$5,500 Maintenance Thro-party Date First Installed: September	Maximum Memory: 1 5M bytes Multiple Users: Yes, 18 Maximum On-Line Storage: 420M	Date First Installed November 1981 Number Installed to Date: 20 DATACON CORP.	Purchase Prior: \$14,000 Maintenance: On-one Date First Installed: 1982
	Syles Maximum I/O Ports; 18 Communications Protocols:	PCM SERIES	DATA GENERAL COMP
Number Installed to Date: 50 — 100			
CYNERSY SYEMS, Noc	Distribution: OEM Yender Sales Terms: Purchase Purchase Price. \$17,000 to \$50,000 Maintenance: On-oris. Return to	Messaging Ward Length: 16-bit Minimum Messagi: 64K bytes Maximum Messagi: 512K bytes Multiple Users: No Communications Protocole:	Operating System: LIP/OS Languages Supported: Co
Word Langth: 8-bit		Multiple Users: No	Maximum Moreory: 64K by
Description Word Langillo: B-bit Operating System: CP/M Languages Supported: Fortran, Basic, Paball, Cyber Four Minimum Memory, 64K Bytes Maximum Memory, 64K Bytes Multiple Usens: No.	Date First Installed' April 1962 Number Installed to Date: 200 (See Vendor Profile Page V-7)	Asynchronous Distribution: End user: Therd-party Vendor Seles Torms: Purchase.	Denktop Word Length: 16-bit Operating System: MP/OS Lenguages Supported: Or Fortran, Sease, Pancal Menimum Memory: 64K by Maximum Memory: 64K by Multiple Users: No Maximum On-Line Storag- Long
Maximum Momery: 64K bytes	GATEMASTERS, CORP.	Rental Lease	Communications Protocol Asynchronous, Synchrono, Distribution: End user Vendor Sales Torres: Puro Vendor Sales Torres: Puro
		Maintenance: On sits Remote	Distribution: End user
Maximum I/O Ports: 38	Word Length: 16-bit Operating System: UNX Languages Supported: Fortun. Pascal, PL/M	facility, TRW, Inc.	Lease Purchase Price: \$18,000 Maintenance: Charles
Ceemanications Protection Approximation, Synchronous, Beynchronous, Stitle, HOLG Beynchronous, Stitle, HOLG Beynchronous, Stitle, HOLG Beynchronous, Stitle Vecdor Bales Teresis Purchase Purchase Price: \$7,000 to \$16,000 Maintenance; Druste Beynchronous, Druste Beynchronous, Druste Beynchronous, Druste Beynchronous, Brusten, Beynchronous, Beynchronous, Brusten, Beynchronous, Brusten, Beynchronous, Brusten, Brus	Pascal, PLM Minimum Memory: 1 SM bytes Masterum Memory: 1 SM bytes Multiple Users, No Mesterum On-Line Storage: 40M	Maintenance Christs, 91,500 fb ac.00 Maintenance Christs, 91,500 fb ac.00 Maintenance Christs, 91,500 fb ac.00 Average Maintenance Fee 330 Dees First installed, 3,000 fb ac.00 See First installed, 3,000 fb ac.00 See First installed to Date: 100 500	Maintenance: On-site Date First Installed: 1981
Vender Bales Yerne: Purchase	Multiple Users, No	(See Vendor Profile Page V-7)	BATAMAC COMPUTER SYSTEMS, INC. 800 SCREE
Maintenance: On-site	bytes Meximum I/O Portic S	DATA GENERAL CORP.	BOO SEREES
Hursber lesialled to Date: 15		CS/IS Desirrop	Word Length: 6-bit
	Asynchronous, Synchronous, Beynchronous	Operating System: MPIOS	Congressing System: CP-M 2 Languages Supported: Co
CYMERSTRYEMS, INC. CYKEY 9000	Vender Sales Terms: Purchase	Word Length: 16-bit Operating System: MP/OS Languages Supported: Cobol, Bess;	Minerum Memory: 64K by
Desktop Word Langth: 5-bit	Distributions: End user Yender Seles Terms: Purchase Purchase Price: \$100,000 to \$125,000		800 SEMES Micro Ward Length: 6-bit Operating System: CPfd I Languages Supported: Cr Fortran, See: Pacul Minerum Memory: 64K by Maximum Memory: 64K by Muthaje Users: No Maximum On-Line Storage
Operating System: CP/M Languages Supported: Fortran;	Meintenance: On-site Date First Installed: November 1982		
Word Longit: 6-bit Operating System: CP-M Languages Supported: Fortran; Basic, Pascal. Cyter Four Minimum Memory: 64K bytes Multiple Users: No. Multiple Users: No. Multiple Users: No.	Maintenance: On-site Date First Installed: November 1982 Number Installed to Date: 10 (See Vendor Profile Page V-7)	Communications Protocolic Apyrchrocous, Synchronous Distribusion: CSM, Synchronous Distribusion: CSM, Synchronous Purchase Price 56 COD to \$10,000 Relateratoric Christin, Platent for rean-facturing facility. Average Relationance Pee: \$85 Dass Frant Institute: May 1962 (See Version Proble Page 1-7)	Communications Protocol
Maximum Memory: 64K bytes. Multiple Users: No.	BAIST SYSTEMS, CORP.	Vender Sales Terres: Purchase Purchase Price: \$6,000 to \$10,000	
	LOGICIAN Micro	Meintenance: On-ere, Return to manufactures facility	Distribution: OEM Vendor Sales Terms: Purc Purchase Prior: \$2,000 to Date First Installed: June (See Vendor Profile Page Is
bytes Maximum I/O Ports: 38 Communications Protocols:	Specific Application: Engineering	Average Maintenance Fee: \$85 Date Door Installed May 1502	Con Veryty Profe Page 1
Convenience of Processes Asynchronous, Synchronous, Beychronous, SOLC, HOLG Desthation: End user Vender Bales Termit. Purchase Purchase Price: \$7,200 to \$15,000 Maintenance: On-ses Date First Installed: January 1982	Word Langth: 16-bit Languages Supported: Foriran; Pascal, C. PL/M		
Distribution: End uper Vendor Bales Torres: Distribute	Pascal C. PL/M	DATA GENERAL CORP. EXTERPRISE 1000	BAYAMAC COMPUTER SYSTEMS, INC. 1000 SERIES Moro
Purchase Price: \$7,300 to \$15,000	Minimum Memory: 764K bytes Mastrum Memory: 15M bytes Muttale Users: No Maximum On-Line Storage: 40M	Desistop Wood Langeby 15-by	Moro Ward Length: 15-24
Date First Installed: January 1982	Meximum On-Line Storage: 40M	Desirop Wood Length: 16-bit Operating System: ENTERPRISE/OS	Operating System: MS-DC
CYBERSYSTEMS, INC.	Maximum I/O Porte: 5 Communications Protocols:	ENTERPOYEE/US Languages Supported: Date: Mineram Memory: 64K bytes Maximum Memory: 64K bytes Multiple Users: No Maximum Ot-Line Storage: 716K	Moro . Werd Length: 16-bit . Operating System: M5-bit . Concurrent CPM CPM M5 than Languages Supported: Cr Portran Basic Pacca . Minimum Memory: 129K bit Massimum Memory: 129K bit Massimum Memory: 4M by Muttiple Users. No . Manimum Co-Line Storag-
Micro	Atvinctronous, Synctronous,	Maximum Memory: GAX bytes	Minimum Memory: 126K to
Operating System: CP/M	Beyndronous Olerbutten: End user Veeder Eales Tarrier: Purchase Purchase Price: \$75,000 to \$85,000 Maintenance: On-site	Maximum On-Line Storage: 716K	Multiple Users. No
Basic, Pascal, Cyber Four	Purchase Price: \$75,000 to \$85,000	Communications Protectals:	Dytes Communications Protocol
DAC: SOOP Micro Word Length: 8-bit Operating System: CP/M Lenguages Supported: Forten, Basic, Pascal, Cyber Four Missishan Memory: 24X Oyles Massiman Memory: 24X Oyles Massiman Memory: 24X Oyles Massiman Memory: 24X Oyles Massiman Dack-Line Storage: 20M	Maintenance: On-site Date First installed: November 1981 Number installed to Date: 120	bytes Communications Protecula: Asynchronous. Synchronous Destination: Tyrd-pin'ty Vendor Bales Turms: Purchase Purchase Price: \$8.000 Maintenance: On-oile	
Meximum On-Line Storage: 20M bytes	BARRY SYSTEMS, CORP.	Purchase Price: \$8,000 Maintenance: On-one Date Piret Installed: September 1961	Vender Bales Terms: Purc
Maximum I/O Ports: 34 Communications Protocols: Asynchronous, Synchronous, Bisynchronous, SOLC, HOLC		1961	Beyndronous Distribution: OEM Vender Balos Yerne: Purc Purchase Price: \$3 500 to Date First Installed: Noven
Bisynchronous, SDLC, HDLC	Operating Bystom: UPICE -	DATA GENERAL CORP. ENTERPRISE 3000	DATA-MAX .
Vender Sales Torme: Purchase	Languages Supported: Fortran, Pascal PLIM		BATA-MAX . UVI MOO
Asynchronous Synchronous Beynchronous SUCC, HCLC Destination End user Vendor Sales Terms Purchase Purchase Price: 32 500 to \$15,000 Mehrisnence: On-site Date First Natisfied; June 1675 Nassher Inesalled to Date: 500	Moro Went Langth: 16-bit Operating Bystem: USC Languages Supported: Fortran, Paccal PL/M Minimum Mammory: GRN: bytes Maximum Mammory: SM bytes Multiple Users: You Maximum On-Can Storage: 40M	Word Longth: 16-bit Operating System: ENTERPRISE:OS	Specific Application: Video Graphics
Date First Installed: June 1676 Muscher Installed to Date: 500	Multiple Users: Yes Meximum On-Line Storage: 40M	ENTERPRISE OS Languages Supported: Sasc	Word Longth: 6-bit Operating System: Z CIFLA!
GYB STSTEMS, INC.		EN IGPPHISE, US Languages Supported: Sesc Minimum Moreory: 64K bytes Maximum Moreory: 64K bytes Maximum Users: No Maximum On-Line Sterage: 13M	Specific Application: Vote Graphics : Word Langth: 6-bit Operating System: 2 CRAL Languages Suspensed: 2 i Ministers Moreory: 350 by Maximum Moreory: 350 by Maximum Or-Line Storage solutions.
MALTIBOX Micro	Maximum I/O Porte: 8 Communications Protocols: Asynchronous, Synchronous,	Multiple Uppro: No Manimum On-Line Storage: 13M	Mutapie Users. No
Word Longth: 32-bit Operating System: UNIX	Distribution: End user		Maximum On-Line Storage bytes
MULTIBOX Morel Length: 32-bit Operating System: LNXX Lenguages Supported: Cotol, Forrer, Basic, Pascar C, Assentator Minimum Memory: 256K bytes	Bisynchronous Diserbution: End user Vendor Bales Terms: Purchase Purchase Price: \$35,000 to \$50,000 Maintenance: On one	Communications Protection Asynchronous, Synchronous Destitution: Thropperty Vander Seles Terms: Purchase	Maximum UO Ports: 4 Distribution: End user Yandar Sales Tarms: Puro

special Application (Voto)
Graphics
Word Limple: 6-bit
Operating Bystem: 2 GRASS, CPIM
Limpuages Supported: 2 Grass
Missimum Morroury, 32% bytes
Maximum Memory, 256% bytes
Multiple Users: No

s: No -Line Storage: GM bytes Manusch Us-Line stranger out bytes Manusch I/D Ports: 4 Deschauser: End user, Third-party Vendor Sales Terms: Purchase Physiological Stranger of Parthese Price: \$12,000 to \$20,000 Maintenance: Chi-sho Date Pitel Installed: December 1902 Number Installed: December 1902 Number Installed: December 1902

BATAPOINT CORP. 1559 Micro Weed Length 8-bit Operating System DOS Langueges Supported Fortran. Banc pain, Delation Micrown Memory: Soft bytes Manistan Remony: Soft bytes Manistan Length Corp. Microws Length Corp. Microw

Majarium On-Line Storage 40M bytes
Gerempications Projection
Gerempications Projection
Gerempications (Synthesisco)
Gerempication
Gerempicatio

Maclimum On-Line Storage: 100M bytes.

Commenciations Protocols: Asynchronous, Synchronous Data Poli Districtions, Ford user Fernder Sales Permis: Purchase, President Sales Permis: Purchase, President Sales President Sales President Sales Despitation of President Sales Despitation of President Sales Despitation of President Sales Despitation of President Sales Pre DATA TECHNOLOGY
HIDUSTRIES
ASSOCIATE - 10
More
Word Length 8-bit
Operating System CP/M
Languages Supported Cobol:
Fortain Basic, Pascal, FU/I, C, MTortain, Basic, Pascal, FU/I, C, M-

Acetyp Newtoneous Fee: 360

10 1 Y. TSCHEGO OF THE STATE OF THE STATE

DATA TECHNOLOGY INDUSTRIES ASSOCIATE - 15

Nombre Installed in Drink 2,500 or 100 or 10

d Length: 6-bit oring Bystem: CP14 3 C: MP(se num Memory; 640: bytes hum Memory; 5100 bytes opts Users: Yes: 3 man On-Line Storage: (M

American Memorano Fee 500
ATA TECHNOLOGY
STRUKT TABLE
STATES
TOTALES
T

Yender Sales Terms: Purchase; Rental, Lease Purchase Price: \$4,000 to \$4,000 Marriemance: On-site, Return to Marvinching Sacity, General manufacturing facility, General Electric Average Maintenance Fee: \$40 Date First Installed: January 1900 Number Installed to Date: 500 — 1,000

> More Length: 8-bit . Languages Supported: Basin Placal um Memory: GAK bytes um Memory: S12K bytes a Users: Yes, 8 um On-Line Storage: SGA/

Mannie Marchine Brenger Steel Mysige Wester Year - Manier Mannie Monte Brenger Steel Mysige - Manier Mysige - M

Languages Supported Cobot.

Forman, Basic Seasi. PLT1.C, Select. PLT2.C, Selec

ASSOCIATE - 18
Moro
Word Length: Bi-bi
Operating System: CP-M
Lengthere State
Operating System: CP-M
Lengthere State
Fortan, Basic, Panca, PU.T., C
Morimum Memory, 541 Oynes
Masirum Memory, 5120 Oynes
Masirum Operating
Masirum Operating
Operating Lenguages Supported Coded Languages Supported Coded Co

Saw Verbox Prices Page 1-7)
BATANUE CORP.
80-300
BO-300
Word Length: 5-bit
Operating System: CPM
Languages Suppersec Cobor.
Basic. Pascia.
Minimum Milenery: 54K bytes
Macifres Memory: 54K bytes
Macifres Memory: 54K bytes
Macifres Memory: 54K bytes
Macifres Memory: 54K bytes
Macifres University 15K bytes
M

	T		
France Broke Broken Brita	DATRICON CORP.	Foreir, Basic	Word Length: 5-bit Operating System: RCO, UNIX Languages Supported: Cobol. Forters: Sear. C. Add. Militimen Manney: 256K bytes Multiple Users: Yor. 5 Maximum On-Line Storage: 40M
Fortran Basic, Pascet, PL/1 Missimum Memory: 64K bytes Meximum Memory: 64K bytes	GPC	Married Married SW Indian	Occasion Sustain BOO LEEV
Manager Manager 647 Inter	More	Maximum Mornory: 644 Dylan	Operating Systems HUG, CHEX
Multiple Upers: Yes, 4	Sentific Application: Process	Maximum Memory: 64K bytes Maximum Memory: 64K bytes Multiple Users: No	Fortron Boar C Ada
	Control	Measure On-Line Storage: 80M	Minimum Manney: 256K hutes
bytes Manimum I/O Ports: 9	Word Length: 5-bit	bytes	Multiple Uppers: Yes, 6
Manimum I/O Ports: 9			Maximum On-Line Storene: 40M
Communications Protocols: Asynchronous, Synchronous	Languages Supported: Cotol: Sear: Pascal PL/1: D-Forth	Communications Proteople; None Distribution: The Copy Vendor Sales Torms: Purchase Purchase Price: \$5,000 to \$10,000	bytes Destholen: End user Vender Sales Terres: Purchase Purchase Price: \$15,000 to \$20,000 Maintenance: Throf-party Date Flest standard: July 1982 (See Vender Profile Page V-5)
Asynchronous, Synchronous	Basic Pascal PL/1: D-Forth	Destribution: Third-party	Chatribution: End user
Asynchronous, Synchronous Distribution: Third-party Yendor Sales Terms: Aurohase Maintenance: Return to	Minimum Memory: 16K bytes Meximum Memory: 64K bytes	Vervior Sales Terms: Purchase	Vender Sales Terms: Purchase
Vendor Sales Terms: Purchase	Maximum Memory: 64K bytes	Purchase Price: \$5,000 to \$10,000	Purchase Price: \$15,000 to \$20,000
Maintenance: Return to	Multiple Users. No	Maintenance: Ch-site	Meintenance: Thro-party
menutacturing lacety. Indesery	Maximum On-Line Storage: 2014	Average Maintenance Fee: \$100	Date First installed: July 1982
Maintenance: Return to rearulaturing facility. Indeserv Date First Installed: March 1963 Number Installed to Date: Less than	bytes Maximum I/O Ports: 3	Maintenance: On-site Average Maintenance: Fee: \$100 Date First Installed: Jaruary 1978 Humber: Installed to Date: 3,000 (See Vendor Profile Page V-6)	(See Vendor Profile Page V-8)
10	Communications Protocols:	WOMEN SANGER TO COME TO CO.	
10	Asynchronous	tone sauce upon unde s-el	DIGHLOG 1000
DATEC INC.	Charles Third and	DELTA PRODUCTS, INC.	Desired 1000
ELECTRONIC NOTEROCK	Vender Sales Terms Derhaus		Specific Application: Date Fetty
	Distribution: Third-party Vendor Sales Torres: Purchase Purchase Price: \$550 to \$1,200		Wood Leastly A.M.
Word Longth: 8-bit Minimum Memory: 95K bytes Maximum Memory: 504K bytes		Word Length: 8-bit Operating System: CPM Languages Supported: Cotos. Fortran, Basic	Controllers System CPM
Market Market SCH Care	manufacturing facility	Operating System: CP/M	Languages Supported: Assembler
Maximum Mamonr SMY today		Languages Supported: Copp.	Minimum Mornory: 64K bytes
Muddenia Unaver You. R	BAVID COMPUTER, INC.	Fortran, Basic	Maximum Moreory: 64K bytes
Mutapie Users: Yos. 8 Maximum On-Line Storage: 40697	U.S.A.	Minimum Memory: 64K bytes	Multiple Users: No
bytes Meximum I/O Ports: 2		Maximum Memory: 160K bytes	Desirion Specific Application: Date Entry Word Leeght & Let Operating System: CPM Larlyseigne Supported: Assembler Maximum Memory: 64K bytes Maximum Memory: 64K bytes Maximum Memory: 64K bytes Maximum Memory: 64K bytes Maximum No-Line Storage: 1.20 Maximum On-Line Storage: 1.20
Maximum I/O Porte: 2	Micro	Multiple Users: Yes, 2	bytes
Communications Protocols:	Word Langth: 16-bit Languages Supported: Cotol Minimum Memory: 1, 1M bytes Maximum Memory: 1, 1M bytes	Micrown Memory: 64K bytes Maximum Memory: 160K bytes Multiple Users: Yes. 2 Maximum On-Line Storage: 85M	Communications Protecels:
	Languages Supported: Coool		Asynchronous
Distribution: Third-party	Mirerson Memory: 1 1M bytes	Maximum I/O Perts: 9 Communications Protecols: None	Distribution: CEM
Vendor Seles Terms: Purchase	Multiple Users: Yes. 4	Communications Protection 19319	Person seems fermit Purchase
Distribution: The Coarty Vendor Sales Terms: Purchase Purchase Price: \$3,296 to \$8,000 Maintenance: On site, Return to		Maisteam I/O Pertic: 9 Communications Proteomic None Distribution: Third party Vendor Sales Tome: Purchase Purchase Price: 58.000 to \$12.000 Maisteamance: On-site Average Maintenance Face: 5120 Osta First Installed October 1978 Member Installed to Date: 1,500	cymicalians Protectis: Asynchronous Distribution: OEM Vendor Seles Tomic: Furchase Purchase Price: 56,495 Maintenance: On-sel, Return to
Maintenance: Christe, Helium to	Distribution: OEM Date First installed: September	Daretters Bitter \$2,000 to \$12,000	nanufacturing facility, Indeserv Date Plast Installed: Hovernor 1980 (See Vendor Profile Page V-d)
manufacturing facility (See Vandor Profile Page V-7)	Parts Start Installant Sections	Maintenance Co. etc.	Date Charles Statement Manager 1980
(See Vandor Profile Page 9-7)		Average Maintenance Fee: \$120	Clear Verytay Physic Plans V.40
DATRICON CORP.	Number Installed to Date: 300 (See Vendor Profile Page V-7)	Date First leatabad Oranter 1976	
	(See Vendor Profile Page V.7)	Humber instelled to Date: 1 500	DIGILOS, MIC. DIGILOS 1900
OV-0 Micro			DIGILOG 1900
MOO	DAVID COMPUTER, INC.	DELTA PRODUCTS, INC.	DesAtoo
Specific Application: Process Control	U.S.A. 203-1R	DELTA 4	Specific Application: Data Entry
Word Langth: 8-bit	203-1R	Moro	Descritory Basechild Application: Data Entry Word Languin B-bit Operating System: GP-M Languingers Supported: Assertzer Streimann Memory: SHK bytes Masterian Memory: SHK bytes Masterian Memory: SHK bytes Masterian Memory: SHK bytes Masterian Memory: SHK bytes
Operation System Ofth	Micro	Word Longth: Stat	Operating Bystom: GP:M
Operating System: OSS Languages Supported: Cotol: Basic, Pascal, C, D-Forth	Mord Length: 16-bit Lenguagers Supported: Cobol: Sassi; Mackine Language Bliniman Blemony: 1 1M bytes Masimum Blemony: 1 1M bytes Multiple Users; Vers. 4 Masimum NO Purts: 2 Disadminor: OFM	Word Languist Scit Child Languages Supported: Crist Languages Supported: Cobot. Forman, Salor. Steinman Marriary: SSK bytes Maximum Marriary: 256K bytes Maximum Marriary: 256K bytes Maximum Criticols: Visi. 4 Maximum Crit	Languages Supported: Assertiter
Bear Pearel C Difreth	Lenguages Supported: Cooct	Languages Supported: Cotot.	Minimum Memory: 64K bytes
Minimum Memory: 64K bytes Maximum Memory: 128K bytes	Basic: Macrine Language	Portran, Basic	Maximum Mornery: 64K bytos
Maximum Memory: 128K bytes	Moramen admitty 1 IM Dyras	meature moreory; out pysis	Multiple Users: No Consequentiations Protocolo
Multiple Users: Yes. 5 Maximum On-Line Storage: 40M	Matter Heart Yes 4	Martine Heart Year of	
Maximum On-Line Storage: 4CM	Manhouse NV Books 2	Maximum Carl ins Steeness State	Asynchronous Distribution: CEM Vender Seles Torres: Purchase Purchase Price: \$8.755
bytee	Distribution: OEM Data First Installed: September	(makin	Vanctor Sales Torrer Purchase
Communications Protocols:	Date First Installed: Sectorator	Maximum I/O Ports: 13	Puerbase Pricer \$5.755
Asynchronous Destribution: Third-party Purchase Price: \$5,500 to \$9,500		Convenientions Protocols: Nove	Meintenance: Oriote, Return to manufacturing facility, Indianov Date First Installed: Adv 1981
Distribution: Triro-party	Number installed to Date: 150	Distribution: ThriS-party	menufacturing facility, Indesery
Maintenance: Fletum to		Vender Sales Terres; Purchase	Date First Installed: Adv 1981
menufacturing facility	DAVIDGE CORP.	Purchase Price: \$10,000 to \$15,000	
Outs (first besteleds have 1992	DAVIDGE CORP. DSB-4/6 Micro	Maintenance: On-oite	DIGILDE, INC. DIGILOG 1800
Outs First Installed: June 1982 Humber Installed to Date: 15	Micro	Average Maintenance Fee: \$140	DIGILOG 1866
(See Vendor Profile Page V-7)	Word Langth: 8-bit Operating System: CPIM Languages Supported: Cobol. Foriran, Basic, Pascal. C	Maximum (IO Parts: 13 Corrus natesitians Proteocols: None Destribution: Third party Vender Ealer: Third party Vender Ealer: Trent: Purchase Purchase Prince: \$10,000 to \$15,000 Maintenance: On onth Areas party on onth Areas party on onth Areas party on onth Areas party on onthe Areas party on onthe Area	Desiracy Specific Application: Date Entry Word Longth: 8-bit Operating System: TURBO DOS, CP/M
	Operating System CPIM	resimper treatment to Date: 1,200	Specific Application, Data Evry
BATRICON CORP.	Contract Street Court	DELYA PRODUCTS, INC.	Operation Systems TURRO DOS
FAC-PAC More	Mineram Monory: 64K bytes Maximum Monory: 64K bytes Maximum Monory: 64K bytes Multiple Users: No Maximum On-Lina Storage: 40M	DP MET	COAL STREET, 10100 DOS.
Morn	Marieum Manager 645 Parter		Language Supported Asserting
	Madicia Deservito	Ward Landly SAN	Minimum Manager Edit Pages
	Maximum Co.J.Inn Storage 4014	Micro Word Length: 8-bit Operating System: DPAST, CPAL Languages Supported: Cobot, Fortran, Seeic Steinman Memory: 64K bytes Multiple Users: You Maximum On-Line Sterage: 65M bytes	Languages Supported: Assembler Minimum Memory: 54K bytes Maximum Memory: 12M bytes Multiple Users: Yes Maximum On-Line Stenage: 50M
Word Langth: 8-bit Operating System: OSS Lenseness Supported Cobol.	Maximum I/O Ports: 6 Communications Protectic Asynchronous, Synchronous	Laneusees Supported: Cotot:	Multiple Uppers: Yes
Operating System: OSS	Maximum I/O Ports: 6	Fortran, Besic	Manimum On-Line Stereos: 50M
Languages Supported: Cobol.	Communications Protectis:	Minimum Moment: 64K bytes	
Basic, Pascal, C. D-Forth	Asynchronous, Synchronous,	Multiple Users: Yes	Distribution: OEM
Minumum Mersery: 12% bytes	Bisynchronous: SOLC, HOLC	Maximum On-Line Sterage: 85M	Vender Sales Terms: Purchase
Languages Supported Cobol, Basic, Pascar, C. D-Forth Marmann Macrany: 128K bytes Massimum Macrany: 128K bytes Massimum Macrany: 128K bytes Massimum Co-Line Storage: 20M Massimum Co-Line Storage: 20M	Communications Protection Asynchronous, Synchronous, Bisynchronous, SDLC, HDLC, Bisynchronous, SDLC, HDLC, Bishtelesier, CDM Venicer Sales Termin Purchase Purchase Princip 595 to \$5,000 Maintenance: HPLLN to \$5,000 Maintenance: HPLLN to \$5,000 Terminications (HPLLN to \$5,000 Terminications) Booliny (HPLLN to \$5,000 Terminications) Howeritor 1802 (Size Visitoria Proteils Piggs V-7)	bytes Maximum I/O Ports: 84 Communications Protecols: None	Desiribution: CEM Vender Sales Torres: Purchase Purchase Prios: SD : 795 Melassesses: On-oils: Return to manufacturing facility, indeeds Desir Prios: the indeaded: Merch 1952
IMUTIDAG USGES: TOS. 4	Yender Sales Terms: Purchase	Maximum I/O Paris: 64	Meintenance: On-site: Return to
massium cin-case Storage: 2064	Purchase Price: \$995 to \$5,000	Communications Protectic None	manufacturing facility, indecerv
Maximum I/O Parts: 8	management meturn to	Communications Protectals: None Distribution: Third-party Vendor Baltie Torris: Purchase Purchase Price: \$7.000 to \$50,000	USED FIRE STREET, March 1982
Communications Protocols:	marunous gradity	Toron some rome Purchase	
	Olive Manufac Stradio Stone M. D.	Mustage Co. 27,000 to \$50,000	THE RANGOW HIS
Charleston Trintmeter	loss same room talk tell	Assessed Manhamana Press 6900	
Purchase Price: \$1.700 to \$5.400	DELYA PRODUCTS, INC.	Date First Installed: December 1991	Oncordes Senters (COM III) COM
Vender Sales Terms: Purchase Purchase Price: \$1,700 to \$5,400 Maintenance: Return to	DELTA PRODUCTS, INC. DELTA 1	Number Installed to Date: 100	Word Longth: 5/15 Operating System: CP/M 80, CP/M 85
Vender Sales Terms. Purchase Purchase Price: \$1,700 to \$5,400 Idahitenance: Return to menufacturing facility	DELTA PRODUCTS, INC. DELTA 1		
Approvious Destinates: Thro-party Vender Sales Terms: Purchase Priors \$1,700 to \$5,400 Maintenance: Return to manufacturing facility Does Prest tendings: January 1963 Number Installed to Date: 4	DELTA PRODUCTS, INC.	Date First Installed: December 1991 Number Installed to Date: 100 BHOLDORF RESILEATION DOMP, DELIFFS-100 Dual Processor	Word Langit: B15 Operating System: CP/M RO, CP/M 85 Languages Supported: State Minimum Morrory: SHK bytes Maximum Morrory: 256K bytes

Maximum On-Line Storage: 6 feld	Meximum On-Line Storage 16684	Since II	Lance
bytes	totes	Minimum Memory 64X Indea	Purchase Price: \$5.200
Communications Destroyde	Communications Protocols: SOLC	Meximum Memory: 128K bytes	
Asymptotopics	Destribution: OTM	Musticle Users, Yes. 5	Maintenance On-ste, Return to
Distribution That party			menutacturing facility, Third-party
	Vendor Sales Terms: Purchase	Meximum On-Line Storage: 2014	Average Maintenance Fee: 570
Vendor Sales Terms: Purchase	Maintenance: lcct	bytes	Date First Installed: 1978
Purchase Price: \$2,675	Date First installed: June 1962	Maximum I/O Porter 2	
Maintenance: On-site	Number Installed to Date: 500		DIGITAN SYSTEMS, INC.
(See Vendor Profile Page V-8)		Distribution: Fortunar	Personal
	DIGITAL PATHWAYS, INC.	Vendor Sales Terres, Purchase	Word Langth: 8-bit
DIGITAL MICROSYSTEMS.	DEFENDED.	Parchase Price: \$8,000	Operating System: CPIM
MC.	Mem	Maintenance: On site, Remote	
DMS-3	Secolfic Application: Security		Languages Sapported: Cobol,
Design		degnostics. Return to manufacturing	Basic, Pagest, PL/1; C. Assembler
	Access	facility	Minimum Memory: 54K bytes
Word Length: 8/16	Word Langth: 5-bit	Date First installed: April 1980	Maximum Memory: 128K bytes
Operating System: CP/M 80, CP/M	Languages Supported: Ross.		Multiple Users: Yes
	Sarrayo	DIGITAL TECHNOLOGY	Maximum Co-Line Stocace: 96M
Languages Supported; Cotol.	Minimum Memory: ECK bytes	HITTERNATIONAL.	twies
Fortran, Basic Pascel, PL/1	Maximum Memory: BOX bytes	DTI 547P-44	
Minimum Memory: 645 twees	Multiple Users: No	Driftsin.	Communications Protocols
Maximum Memory: 512K types	Maximum I/O Ports: 50		Asynchronous, Deventronous
Multiple Users: Yes, 30	Detribution: End uper	Specific Application: Typesetting.	Distribution: First user
Maximum On-Line Storage 160M	Vendor Sales Terms: Purchase	Data Entry	
bytes		Word Length: First	Yendor Sales Terms: Purchase:
Communications Proteonly SOLC	Purchase Price: \$15,000 to \$50 000	Operating System CPIM 7/DOS	Lease
	Maletenance: Return to .	Lancuages Supported Resc. D.	Purchase Price: \$9,000
Distribution: OEM	-marufacturing facility, Third-party		Meintenance: On-orie, Pletum to
Vendor Sales Terms: Purchase	Average Maintenance Fee: \$200	Minimum Memory: 64K bytes	
Maintenance: loot	Date First Inetplace March 1983	Meximum Memory: 1255 bytes	Average Maintenance Fee: \$120
Date First Installed: November 1980	(See Vendor Profile Page V.6)	Meximum On-Line Storage: 1 6M	Date First Installed: 1979
Number Installed to Date: 500		Index	
	DIGITAL PAYMWAYS, INC.	Maximum I/O Porte: 2	DIRECT, INC.
(See Vendor Profile Page V-B)			DIRECT 1005
		Communications Protocals:	Men.
DIGITAL INCROSYSTEMS	Specific Application: Montovyo	Asyrchronous	
MC.	Word Length: 6-b1	Distribution: End user	Word Length: 8-bit
COMP. A	Lancages Supported Basic	Vendor Sales Terms: Purchase	Operating System CPIM
Desitor			Minimum Memory: 64K bytes
Word Length S-br	Sarrays	Meintenance: On-site, Remote	Maximum Memory: 64K bytes
	Minimum Memory: 16X bytes	chandostos. Return to mary facturary	Multiple Users: No
Operating System: CP:M	Maximum Memory: BOX bytes	facility	Maximum On-Line Storage 1.2G
Languages Supported: Cotol	Multiple Users: No	Date First Installed: February 1963	bytes
Fortran Basic, Pascal, PU1	Maximum I/O Ports: 6		Maximum I/O Ports: 2
Minimum Memory: 64K bytes	Communications Protocols		Communications Protocols:

DIGITAL MICROSYSTEM MC. DMS-15

DOB-15 Ward Langue 6-bit Operating System: Child Langue 6-bit Operating System: Child Langue 6-bit Operating System: Child Langue 6-bit Operating System: Operating States of the States

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Maximum Memory 512% tyres	Vendor Sales Terms: Purchase:	DUAL SYSTEMS CORP.	Maximum On-Line Storage: 2
Maximum Memory: 512K bytes Multiple Upors: No Maximum On-Line Storage: 11M			bytes
Maximum On-Line Storage: 11M	Purchase Price: \$36,950 to \$86,000	More	Meximum I/O Ports: 6
bytes Maximum (/O Ports: 5	Maintenance: On-site Average Maintenance Fee: \$310 Date First Installed: August 1981 Number Installed to Date: 100 —	Word Length: 16/32-bit Operating System UNIX Lenguages Supported Cotol; Fortran, Basic, Rasic plus. C.	Communications Protocols: Asynchronous, Synchronous
Communications Protocols.	Date First Installed: August 1981	Languages Supported Cotot	Distribution: Thrd-party Vendor Sales Terms: Purchas
Asynchronous Distribution: Third-party Vandor Seles Terms: Purchase Purchase Price: \$2,965 to \$4,600.	Number installed to Date: 100 — - 500	Fortran, Basic, Basic plus. C. Forth	Vender Sales Torms: Purchas
Vendor Sales Terms: Purchase	- 000	Minimum Manager 51'97 testes	Purchase Price: \$9.950 to \$11
Purchase Price: \$2.965 to \$4,600.	DP BUSINESS SYSTEMS, INC.	Minimum Moreory: 512K bytes Maximum Mercery: 3.2M bytes Multiple Users: Yes. 16 Maximum Cir-Line Storage: 2 4G	Maintenance. On-see, Recum manufacturing tacility. Thirdipe Asserge Maintenance Fee: S Date First Installed: March 19 Mumber Installed to Date: 1,0
		Multiple Users: Yes, 16	Average Maintenance Fee: \$
minufacturing facility Average Manherunce Fee: \$45 Date First Installed: August 1982 (See Vendor Profile Page V-6)	Moro	National Circline Storage: 2 4G	Date First Installed: March 19
Date First Installed: August 1982	Wood Length: 8-bit CPAL MPNs 20 Operating System: CPAL MPNs 20 Languages Supported: Cobd. Fortan, Basic, PLT, Assembler Skelmum Memory: 12th Upter Maximum Memory: 11 Upter Maximum Memory: 11 Upter Maximum Memory: 10 Upter Memory: 10 Upter Maximum Memory: 10 Upter Maximum Memory: 10 Upter Maximum Memory: 10 Upter Memory: 10 Upter Memory	Maximum I/O Ports: 18	5.000
(See Vendor Profile Page V-8)	Languages Supported: Cobol.	Communications Protocols: Asynchronous, X.25	
OP BUSINESS SYSTEMS, INC.	Fortran, Basic, PL/1, Assembler	Newforther Enturer	DYKABYTE
DP 480	Maximum Messacy: 1.1M Paris	Distribution: End user Vender Sales Terms: Purchise.	SA05 Desktop
Micro Word Langth: 8-bit	Multiple Users: Yes, 16		Word Langth: 8-bs
Word Langth: 5-bit Operating System: CPIA, MPIAT 20 Languages Supported: Colox, FOTIAN, Basic, PL/1, Assembler Minimum Memory: 126X bytes Masimum Memory: 354X bytes Muslipie User: Yes, 4 Masimum On-Live Storage: 20M	Communications Protocola: Asynchronous, Synchronous,	Purchase Price: \$22,200 Maintenance: On-site, Remote	Word Langth: 8-bit Operating System: CPIM, MP. OASIS
Languages Supported: Cobol	Baynchronous	diagnostics. Resum to manufacturing facility	Languages Supported: Cobol
POWER, Besic, PL/1, Assembler	Vendor Sales Terres Purchase,	facility	Fortran, Besic, Pascel
Maximum Memory: 384K bytes	Vendor Sales Terres: Purchase.	DIMANGO SYSTEMS INC	Linguages Supported: Cobol Fortran, Besic, Pascal Minimum Menory: 64K bytes Maximum Menory: 40K bytes Multiple Users: Yes: 8 Mesteum On-Line Sterage: 11
Multiple Users: Yes, 4	Purchase Price: \$40 000 to \$11 000	DURANGO SYSTEMS, INC. 700 SERES	Multiple Uppers: Yes. 0
Mesheure On-Line Storage: 2064	Maintenance: On-site	Denkhop	Mexicum On-Line Storage: 1
Maximum I/O Ports: 10	Perchase Price: \$40,000 to \$91,000 Maintenance: On-site Average Maintenance Fee: \$510 Date First Installed: August 1981 Number Installed to Date: 100 — ,	Dentitop Word Langth: S-bi Operating System: DXSSM, CPM, MPM	Dytes Maximum I/O Banks 10
Communications Protocols:	Number Installed to Date: 100 —	MPIM	Communications Protocols:
Meathers On-Line Storage: 20M tytes Meathers to Prote: 10 Communications Proteote: Asynchronous, Synchronous, Beychronous Destbusion: End user Vandor Sales Terms: Purchase: Jacon	500	Languages Supported: Basic Misseum Mentary: 64K bytes Maximum Mentary: 64K bytes Maximum Homer: No Maximum On-Line Storage: 4M	Seximon I/O Perts: 18 Communications Protocols: Beynchronous Distribution: Thropprty Vendor Sales Terms: Purchase Purchase Price: \$8,000 to \$12
Distribution: End user	DUAL SYSTEMS CORP.	Maximum Morney 64K Incom	Vendor Sales Terms Durches
Vendor Sales Terms: Purchase:		Multiple Lieers: No	Purchase Price \$8,000 to \$12
Derbana Drice: \$14 050 to \$30 050	Moro	Meximum On-Line Storage: 4M	Maintenance: On one, Remote diagnostics Return to manufact facility. Three Investment 1901 Named Installed to Date: 500 Named Installed to Date: 500
Purchase Price: \$14,850 to \$20,850 Maintenance: On-size Date First Installed: January 1963 Mareher Installed in Date: Less than	Specific Application: Industrial	Maximum I/O Parts: 3	facility Thirt-party
Date First Installed: January 1963	Wood Leasth: 16/22 to	Communications Protocols:	Date First Installed: 1901
10	Operating System: MAX SLG, RTK	Asynchroneus, Synchronous	Number Installed to Date: 500
See Vendor Profile Page V-8)	Languages Supported: Cotol.	Yender Sales Terms Purchase	(See Vendor Profile Page V-9)
	Operating Systems MAX SUC, RTX Languages Busported: Cock, Fortun, Basse, Pasca, C, Forth Minimum Mamory; 32X bytes	Communication Protection Applications, Synthyronous Estimations, Throp party Vendor Bales Terms Prochae Parchaes Protect St. Con- Backmann Charles, Return to manufacturing looks, Throp party Date Pret Installed Coston 1976 Banaber Installed to Date 1,000 —	
OP BUSINESS SYSTEMS, INC. OP 1660/10	Maximum Moreory: 32K bytes Maximum Moreory: 4M bytes Multiple Users: No Maximum On-Line Storage: 2M	Maintenancer On site, Return to	BYHABYTE
Mero	Multiple Upons: No	Date Fret Installed October 1976	S710 Desirton
PP 1880/19 Micro Length: 8-brt Openstag Systems: CP/M-MP/M-2-9 Jergiseges Supported: Cotot: Orbits: Session PJII, Assembler Bississes Merchity: 120K Syles Bississes Merchity: 120K Syles Bississes Merchity: 120K Syles Bississes Merchity: 130K Syles Bississes Syles Session Syles Bississes Syles Session Syles Bississes	Maximum On-Line Storage: 29J	Number installed to Date: 1,000 -	Word Longth: S-bit Operating System: CPIM, MP/ OASIS
entrusted Supported Cotol	byces Maximum (10 Parts: 4 Communications Protocole:	(See Vandor Profile Page V-6)	Operating System CPIM, MP/
Ortran, Basic, PL/1, Assembler	Communications Protocole:		Laboration Supported Cody
Minimum Mornbry: 128K bytes	Asynchronous, Synchronous Distribution: End user Vender Sales Terms, Purchase,	SURANGO SYSTEMS, INC.	Languages Supported: Cobol: Fortran
Adiobs Uners: Yes: 15	Vender Sales Terms, Purchase.	Desktop	Minimum Memory: 64K bytes Maximum Memory: 400K bytes Maximum Memory: 400K bytes Maximum On-Line Storage: 16
Santrum On-Line Storage: 30M	Rental		Multiple Users: Yes &
Maximum I/O Porte: 34	Maintenance Charle Service	Operating System: OX85M, CP-M: MP-M	Maximum On-Line Storage: 10
Communications Protector	Parchese Price: \$4.440 Maintenance: On-sis: Remote degrateics: Return to menufacturing	Landaus Comments Comments	bytes Maximum I/O Parts: 16 Communications Protocole: Bisynchronous Disynchronous Disynchronous Disynchronous Parthesium: Thropperty Parthesium: Parthesis (12 000)
Immunications Proteoms: Mynchronous, Synchronous, Mynchronous Markhalten: End user Fender Sales Torms: Purchase,	facility. Third-party Date Piret Installed: September 1981	Longsapes Supported: Sacc Movemen Messory: 64K bytes Messeum Messory: 65K bytes Masseum Messer; 76K bytes Masseum Con-Line Storage: 444	Communications Propunds
September End one	1961	Meximum Money: SSK bytes	Disynchronous
feridor Sales Terms: Purchase,	(See Vendor Profile Page V-8)	Maximum On Line Storage 4M	Durchase Stine: 512 000
name are Prior: \$25,285 to \$51,000 feathern Prior: \$25,285 to \$51,000 feathern prior: \$25,285 to \$51,000 feathern prior: \$25,000 feathern prior: \$25,0	DUAL SYSTEMS CORP.	tytes	Destruction: Thro-party Purchase Price: \$12,000 Melhitenance: On-size. Remote claignostics. Return to menutaci scorey. Thro-party Date: First trestated: 1981 Number Installed to Dete: 500 1,000
bridgeneser Openie	BY20	Maximum I/O Perts: 6	dagnostics. Return to menutace
rerege Meintenance Fee: \$300	Micro	Asynchronous, Symphronous	Date First installed 1981
lete First Installed: August 1981	83/20 Micro Went Langtic 16/22-bit Operating System: UNIX 7; SYSTEM II LINIX	bytes, Mazimum I/O Perit: 6 Convenience Services 6 Convenience Services 6 Convenience Services 6 Asynchronous, Synchronous Desthautes: Third party Vender Sales Termic Nucleus Purchase Price: \$7.400 to \$9.900 Melantenance Co-site, Ratum to restudictuming facility. Third-party Arierope Malantenance Face: \$100 Dest Facel Installed: September 1990	Number Installed to Date: 500
	SYSTEM II LINK (PUL 7;	Provider Sales Terms: Purchase	1,000
	Languages Supported Cobot	Meintenance: On-oite, Return to	SABLE COMPLYER, INC.
P BUSINESS SYSTEMS, INC.	Languages Stapported: Cobol: Forten: Basic plus, Pascel, C. Minemum Marrany: 512N bytes Maximum Mersery: 3 2M bytes Multiple Users: Yes: 4 Maximum On-Line Stamage: 8DM	manufacturing facility. Third-party	EAGLE COMPUTER, INC. 1800 SERIES Destrop
Boro	Maximum Manager 1 254 hates	Case Size testalist Section 5	Desking
ford Longth: 8-bit	Multiple Users: Yes. 4		Word Langth: 15-bit Operating System: MS-DOS, D
perating Systems CPIM, MPIM 20	Maximum On-Line Storage: 804	Number Installed to Date: 1,000 — 5,000	
P GUSINEES SYSTEMS, INC. P 160/20 - Story Intel Length: Bolt Specifing System: CPIA, MPNA 2 0 antiquation Supported: Cobat: Cotars: Esser. P1/1, Assertoir Informat Messay: 128/6 bytes Laurann Silveniery; 1.1M bytes Length Story Length Stor	Maximum I/O Porte: 15	1.000	Languages Supported: C-Saoi; Minimum Memory: 129K bytes Maximum Memory: 512K bytes Multiple Users: Yes, 8 Maximum On-Line Storage: 10
Brimum Memory: 128K bytes	Communications Protectls: Asynchronous, X 25	DURANGO SYSTEMS, INC.	Maximum Memory: 512K bytes
Assimum Memory: 1.1M bytes		Desires	Multiple Users: Yes, 8
Section On-Line Blomps: 30M	Distribution: End user Vendor Sales Terms: Purchase.	Wood I would' find	
100		Desktop Word Langth: S-bit Operating System: DIXESM, CPAM, MPAM	Maximum I/O Perte: 11 Communications Protecute:
ytes leadinium I/O Perts: 34 sermanications Protocols: synchronous. synchronous leadbatton: End user	Purchase Price: \$15,600 Maintenance: On-oile, Remote diagnostics, Return to menufacturing	MPAM	Communications Protection
synchronous, Synchronous,	Georgetics, Return to menufacturing	Longuages Supported: State Minimum Memory: SAK bytes Mealman Memory: 195K bytes Malingle Users: Yes	Communications Proteomic Asynchronous Synchronous Distribution: Third-party Yender Sales Torms: Purchase Purchase Price: \$6 500 to \$10.0
eynchronous		Manhouse Memory: 190K bytes	Vender Sales Terme: Purchase
	Date First installed: Are 1962		

Maintenance: Third-party Date First Installed: December 1982 (See Vendor Profile Place V-3)	Maintenance: On-site Date First Installed: December 1978 Number Installed to Date: 5.000	Languages Supported: Cotol Fortran, Basic, Pascat, PL/1; C	Morg Word Longth: Stat
	(See Vendor Profile Page V-3)	Minimum Memory: 64K bytes Maximum Memory: 1M bytes	Word Length: Stat Operating System CPIM Languages Supported: Assem Cotol, Forzar, Basic, Pascal
EAGLE COMPUTER, INC.	ECS HICROSYSTEMS, INC.	Multiple Users: No Maximum On-Line Storage: ECM	Cobol, Forvar, Basc, Pascal
Desktop	ECS 4500	Maximum NO Ports: 4	Maximum Moreory: 64K bytes Maximum Moreory: 200K bytes
Word Longth: Stat Operating System: CPIM Languages Supported: C, Sanc Minimum Memory: 64K bytes	Micro Specific Application: Manhame	Maximum (10 Ports: 4 Communications Protectis:	
Languages Supported C. Basic			Maximum I/O Ports: 4 Distribution: OEM, Third-party
Minimum Memory: 64K bytes Maximum Memory: 64K bytes	Word Length: 5-bt -	Distribution: Third-party Vendor Sales Terms: Purchase	
	Operating System: CPM Languages Supported: Cobol.		Purchase Price: \$1,324 Mentenance: Return to
Maximum I/O Ports: 4	Minimum Momory: 64K bytes Measure Momory: 220K bytes	Date First installed: 1977	Date First Installed: September 1901
		E & L INSTRUMENTS, INC.	Number Installed to Date: 50 -
		FOX	100
Distribution: Third-party Vendor Bales Terres: Purchase	Maximum I/O Ports: 4	More	(See Vendor Profile Page V-6)
		Specific Application: Training Word Length 8-bit Operating System: Proprietary Languages Supported: Machine	EPIC COMPUTER PRODUCT
Maintenance: Thrid-party Date First Installed: November 1981	Asynchronous, Synchronous.	Operating System: Proprietary	INC. EPISODE 1248
Date Last Married Vovetick, 1261	Bayretronous Distribution Tries costs		Micro
EAGLE COMPUTER, INC.	Distribution: Third-party Vendor Sales Teres: Purchase Purchase Price: \$5,000	Minimum Memory: 6K bytes Maximum Memory: 64K bytes	
EAGLE II	Purchase Price: \$5,000 Maintenance: On-site	Maximum Memory: 64K bytes	Operating System CP/M
Desirtop Word Langth: 8-bit	Date First installed: January 1990	Multiple Users: No Communications Protocols:	Fortran Sanc Pascal Assesse
	Date First installed: January 1960 Number Installed to Date: 2,000		Operating System CP/M Languages Supported Coor: Fortrary Basic, Pacca, Assemble Minimum Manney; 646 bytes Maximum Manney; 400% bytes
Longuages Supported: C. Basic Minimum Mesory: 64K bytes	E A H ELECTRONICS	Distribution: Third-party Vendor Sales Terms: Purchase	Maskman Memory: 400K bytes Multiple Users: No
	EH-6100		
	Micro	Meintenance: On-site. Return to	Distribution: OEM, Third-party Vander Sales Terms, Purchase
Maximum On-Line Storage: 1064	Word Length: 12-bit Lengueges Supported: Fortran.	menulacturing facility	Durchase Drice: \$1 706
Maximum I/O Parts: 4		Date First Installed: August 1982 Pumber Installed to Date: 500 (See Vendor Profile Page V-8)	Purchase Price: \$1,396 Maintenance: Return to
Communications Protocols:		(See Vendor Profile Page V-S)	Date First Installed: Sectorate
Asynchronous Distribution Trustings	Maximum Moreory: 32K bytes Multiple Users: No	EAL INSTRUMENTS, INC.	1961
Distribution: Transporty Vendor Sales Torres: Purchase		MMO1	Number Installed to Date: 50
Purchase Price: \$3,995	bytes	Man	100
Maintenance: Third-party Date First Installed: February 1982	Maximum I/O Ports: 64 Communications Protocols:	Specific Application: Training	EPIC COMPUTER PRODUCT
		Word Langth: 5-bit Operating System: Proprietary Languages Supported: Moctore	FPRODE 1794
EAGLE COMPUTER, INC.	Distribution: Third-party Vendor Sales Terms: Purchase	Languages Bupported Mactine	
		Language Minimum Memory: 1K bytes Maximum Memory: 64K bytes	Word Langth S-bit Operating System CPIM Languages Supported: Cobot: Forest, Basic, Pascal, Assences Motors Mississipping
Word Larget: 8-bit Operating System: CP/M Languages Supported: C, Basic Minimum Manney: 64K bytes Misiatrum Monney: 64K bytes	Maintenance: Return to	Maximum Memory: 64K bytes	Operating System CPM
Language Supported C Same	Date First Installed Income 1980	Communications Businessies	Fortran, Basic, Pagest, Assertose
Minimum Memory: 64K Dytes	Date First Installed: January 1980 Humber Installed to Date: 50 —	Asynchronous Distribution: Third-party Vender Seles Terms: Purchase Purchase Price: 5000	Fortion, Basic, Flacott, Assertica Mississes Memory; 64K; bytes Masterian Memory; 80X (bytes Masterian 110 Peris; 4 Datribution: 05M; Trint-party Vender Balles Terms; Purchase Purchase Prior; \$1,572
Maximum Memory: 64K bytes	Ser Vendor Profile Page V-Ø)	Distribution: Third-party	Malleria Unaver No.
Maximum On-Line Storage: 107M		Purchase Price: 5/00	Maximum I/O Ports: 4
	ELECTRONIC CONTROL		Distribution: CEM, Third-party
Meaimum I/O Ports: 4 Communications Protecula:	TECHNOLOGY, INC.	Charufacturing facility Date First installed: May 1974 Number installed to Date: 6,000	Purchase Price: \$1,572
Asynchronous Distribution: Third-party Vender Sales Terres: Purchase Punthase Price: \$6,995	Morn	Number Installed to Date: 6,000	Maintenance: Return to menufacturing facility: Third-party Date First Installant September
Distribution: Third-party	Word Larges: 5-bit Operating System: CPIM, NORTHSTAN DOS		Date First Installed Secretary
Partitione Price: \$4.995	MODTUSTAN TOTAL	E & L INSTRUMENTS, INC.	
Maintenance: Third-party Date First Installed: February 1982	Languages Supported: Cobol: Forsen, Besic, Pacel, PL/1; C		Number Installed to Date: 50
Date First Installed: February 1982	Forsan, Besic, Pascel, PL/1; C	Specific Application: Training Word Length: Bibt Operating System: Proprietary Lenguages Supported: Machine	
ECS MICROSYSTEMS, INC.	Minimum Memory: 64K bytes Maximum Memory: 64K bytes	Word Longth: Box	APIC COMPUTER PRODUCT
		Languages Supported: Machine	INC. EPIGCOS 2144
More	Maximum On-Line Storage: 4064 -	Minerum Memory: 4K bytes	
Specific Application Marrhama Erseleton		Marines Memory: 4K bytes	Word Langth: 8-bit .
Word Langue S-tot		Maximum Mamory: 54K bytes Multiple Users: No	Language Supported Code:
Languages Supported Cobol. Forker, Seac. Assembler Minimum Memory: 64K bytes Maximum Memory: 220K bytes	Asynchronous Distribution: Third-party	Communications Protecots:	Word Langtly 8-bit Operating System: CPM Languages Supported; Cotol: Fortian, Basic, Pancal, Assembles Minimum Memory; GMC bytes Maximum Memory; 400K bytes
Minimum Memory: 64K bytes		Distribution Third-corre	Minimum Memory: GIX bytes Maximum Memory: 400K bytes
Maximum Memory: 220K bytes	Maintenance: On one Date First Installed: 1977	Distribution: Third-party Vendor Balos Terres: Purchase Purchase Price: \$1,500	Multiple Users: No
Multiple Users: No Meximum On-Line Storage: 2M	(See Vendor Photo Page V-01	Purchase Price: \$1,500 Maintenance: Return to	Maximum I/O Ports: 4
Maximum I/O Perts: 4		manufacturing facility	Maximum Memory: 400K bytes Maximum Horeire: 4 Destination: CEM: Thers-party Yender Bates Terres: Purchase Maximum Reter 5 Tri

EPIC COMPUTER PRODUCTS, INC. EPISODE 3215 Moro Word Langth: II-bs

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Maintenance: United Asserting Maintenance Fee: Six American Maintenance Fee: Six American November Houses (epished to Dutte: 10) 500 (Side Vendor Profile Page V-9)

Marci Moro Merci Langth; 9-bit Operating System: CPM, EXONET: MP/M, EXONET: MP/M, EXONET: MP/M, C Bisse Marcinum Review Supported: Basic, Pascal, PU-1; MT Plus, C Bisse Maximum Memory; 64K bytes Maximum Memory; 65K bytes Memory; 65K bytes Maximum Memor stream On-Line Sterage: 5000.

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CEM, Third-party

state Sales Temme: Purchase

stream Port Sales Temme: Purchase

these Prices S2.485 to \$3.385

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reage Malamenence Fee: 325

a First Installed to Date: 100 —

filter Installed to Date: 100 —

Micro Longth: 9-bit Word Longth: 9-bit Operating System: CPIM, EXCINET, MP-M Longuages Responsed: Banic, Pascal PL/11 MT Plus, C-Basic Maximum Menency: GMX bytes Maximum Menency: GXX bytes Maximum CPI-Line Storage: 1M Resimum CPI-Line Storage: 1M INSER TOWN
INSERT PRODUCTION
CHYCOLOGY
C

Then story
of Langth S-bet institle Byssen: CP14, 2NET SAF14, 2NET

Languages Supported: Banc, Pascal, PL/1, MT Plus. C-Basic Minimum Memory: 64K bytes Maximum, Memory: 25th bytes Multiple Users: Yes. 4 Maximum Ce-Line Storage: 6 6M en I/O Porter 4 meanture I/O Ports 4
Communications Protocols:
Asynchronous
Destributers CPUM. Third-party
Vender Seles Termis: Purchase
Punchase Prior: 50 455 to \$7.405
Maetenance: On ste
Average Maintenance Fee: \$30
Destributers Added

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Blassmens On-Line Storage: 13M
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The second of th Micro Word Langift: 9-bit Operating Systems CPIM. EXXXVET, MIVIL Languages Supported Stanc. Places. PLIT: MT Plair. C-Bens Bishvaran Mareney; 540K bytes Markings Mareney; 200K cytes Multiple Users: Yes, 32 Markings On-Line Storage: 20 Markings On-Line Storage: 20

Distribution: OEM. Third-party Vendor Sales Terms: Purchase Purchase Price: \$3,795 to \$10,395 Mentionance: On site Average Maintenance Fee: \$40 Date First Installed: May 1560 Number Installed to Date: 100 —

Maximum OH-Line Storage: vun-types Maximum 1/O Ports of Controllations Proteomics Algorithms of Controllation Algorithms of Controllation Algorithms of Controllation Fundamental Controllation Participation Controllation Average Maintenance Fee: 540 Average Maintenance Fee: 540 Number Installed to Delex 100 — 500 200 of STREET, CO.

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System 10 Partie: 2
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Destination: Throughary
Vander Eales Terres: Participes
Purchase Price: 33:26 to 54:305
Maintenance: The Sparty
Average Maintenance Pres: \$44
Date Find Intellight Strokery 1982
(See Vendor Prote Page + 0)

Ger Vertor Prote Page V-10

LEATER

PARTIES

RECORD LECTROSICE, INC.

INCO 195

Personal Spring, In-bot

Copyrising Spring; The Discount Code

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Record Code

R

ray, OEM, End

1.

ERAL AUTOMATION, INC.

INA 1500 to rd Length: 16:32-bit resting System: PCK guages Supported: Basic imum Memory: 256K bytes imum Memory: 256K bytes spile Users: Yes. 4 Lingum Chr. Line Storage: 40M

Maximum I/O Ports: 6	
Asynchronous	
Distribution: Fod user	
Vendor Sales Terms: Purchas	
Pumbage Price: \$21,000 to \$3	
GENERAL AUTOMATION,	
7988A 2000	
Mecro -	
Word Length: 16/32-bit	
Operating System XEMX	
Fortran, Basic, Pascal, C	
Minimum Memory: 256K byte	
Measwarn Memory: 256K byte	
Multiple Users: Yes, 4	
Meximum On-Line Storage: 7	
Dyles	
Maximum I/O Ports: 6	
Communications Protocols	
Asynchronous	
Distribution Fnd user OFM.	
Purchase Price: \$23,000 to \$3	
GENERAL AUTOMATION.	
ZEBRA 2500	
Maro	
Word Length: 16/32-bit	
Operating System: PICK	
Languages Supported: Basic	
Multiple Users: Yes, 4	
Maximum On-Line Storage: 7	
Maximum I/O Ports: 6	
Communications Protocols:	
Asynchronous	
Distribution: End user	
Vecdor Sales Terms: Purcher	
Purchase Price: \$25 000 to \$2	

il Length: 16:22-bit length: 16:22-bit lening System: XCNXX pages Supperted: Cotor: an Basic, Pascal. C marin Memory: 18 bytes pic Users: Yet. 6 inum On-Line Storage: 28

Length: 16/32-bit sings System: PCK sings Supported: Banc num Memory: 256K bytes mum Memory: 18 bytes pie Users: Yer, 16 mum Op-Line Storage: 202

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Maximum I/O Ports: 16
Communications Protocols:
Asynchronications Purchase
Vendor Sales Terms: Purchase
Purchase Price: S30 000 to $60,000
Maintenance: Remote diagnostics
  GEMERAL AUTOMATION, INC.
2EBRA 5500
Moro
Word Length: 16/32-bit
Operating System: PCK
Lenguages Supported: Date
Marging Users: Yes. 22
Macoman On-Line Storage: 622M
                   ERAL AUTOMATION, INC.
                       unications Protocols:
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button End user, OEM
hase Price: $59,000 to
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GOULD, INC.

Maintecence On-site
OMNIX, NPC.
GRADI
DISPATO,
Word Length: 8-bit
Operating System: CSS+I, CSSLengtappes Bupscriete: Cotool,
Forman Basic Pleasal, C. Assembler
Maintenan Memory: 56th Cytics
Maintenan Memory: 14th Cytics
Maintenan City Line Storage: 200M
Dytes

Masterum On-Line Storage: (950M Masterum I/O Profes: 164 Communications Protocols: Approtromate, Bespectromass Uniformation End use: Westerder Sales: 8 etc., ON Junior Wester Sales: 8 etc., ON Junior Participation (Online) Date Party Septide: 1990 V-107 (See Vestor Profes Page V-107)

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Deprivation and user, OEM, Thro-barry Committee Turner, Purchase Norther Protes \$3,250 Maintenance, Remote degrootics, Return to menufacturing looking Date First Installed. 1977 Humber Installed to Date; 2,000 (See Vendor Profile Page V-10)

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COLLERS WEST CONSERVERSES

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Maximum I/O Ports: 48
Communications Protectes:
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Contribution Column: Purchase
Purchase Prior: 54,500 to 555,000
Maximum Column: Purchase
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Maximum Column: Asynchronous, Bisynchronous Distribution: End coar Vendor Sales Terms. Purchase. Rectal Purchase Price: \$4,000 to \$18,000 Relationsender On site Date Find Installed 1973' Number lessalied to Date: 200

Number Isstalied to Dete: 200
BOTO COMPUTER CORP.
BOTO COMP

GOULD, SEC.

GOOD CONTROLLER

MODIT CONTROLLER

Asychronous, Issychronous, SQLC, HDLC DestRuston: CEM Vandor Sales Terms: Purchase Parchase Prior: \$2,000 to \$7,000 Maintenande: Thrit-pairly Dete First Installed: July 1981 Humber Installed to Date: 125

Nember Invalided to Delic 125
MARTTORIES, 125 VALDNI Morp Specific Application: Food Service Werd Length: 8-bit Marinum Silvenery: 126th bytes Marinum Silvenery: My tyris Multiple Uljern: Yes. 4 Communications Proteosis: Anyochronous, Bayestronous Distribution: Crid user Vandar Salps Terris: Purchane;

(See VIRIDIO LINE VIRIDIO DE LA COMPTURE VIRIDIO DE L'ANGLE DE L'A

Zilog's new System 8000 speaks seven languages. Fluently!



our Coul ine Storage 1000 Maximum On-Line Storage: 10M byte.
Communications Protocole: Approximate Approximate Protocole: Approximate Protocole: Approximate Protocole: Approximate Protocole: Select Terms: Protocole: Select Terms: Protocole: Select Terms: Protocole: Select Protocole: Page V-10)
Select Vision Protocole: Page V-10) Ward Langth: 5/16 Operating System; CPIM 95, ZDOS, MS-DOS

Operating System; CPIM 98, 2DOS MS-DOS Languages Supported Cobol, Fortini, MS-Basic, Pascal Manamen Memory; 192K bytes Manamen Memory; 192K bytes Manager Users; No Manamen Ce-Line Storage; 10M Manamen Ce-Line Storage; 10M

Maximum Certine Springer (OM bytes unications Protocols: Approximation Protocols: Approximation End user Veedor Sales Terma: Purchase Purchase Prior: \$4,029 to \$4,559 Maintenance: Return to manufacturing facility Date Prior Installed: Promiser 1953

Glee Vendor Profile Page V-13)
HEWLETT PACKARD CO.
933
Desiliop
Berd Length: M-ox
Operating System: Prodrietary
Lenguages Deported: Direct
Minimum Recovery: 20 System
Minimum Recovery: 20 System
Minimum Con-Lune Storage: 450M
Interioration Con-Lune Storage: 450M
Interioration

nace Price: \$13,000 mance: On-site livel installect: 1979 or tretailed to Date: 500 ---

Vendor Profile Page V-11) HEWLETT-PACKARD CO. 5045 Denktop Word Langth: 18-br

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HERNLETT-PACKARD CG,
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Hond Langth; 8-bit
Operating System: IP-DOS, CPM
Languages Supportion Basic; AGL
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ustream Ce-Line Storage: SM litri
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richase Price: 95.800
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MCREATE PACKARD CO.
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Purchase Price: \$3.000

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Operating System; CP:M 86: MR. Operating systems CP-Nt Sc. MS-DOS Languages Supported Cobol, Forten Banc Minimum Memory: 256K bytes Maximum Memory: 1 2M bytes Maximum On-Line Storage: 20M Indianam On-Line Storage: 20M Indianam On-Line Storage: 20M

Maximum On-Line Stronger 20M typics and the Control of Communications Projected Maximum I/O Ports of Communications Projected Asynchronous Developation: Their Sporty Vendor Sales Terms. Purchase Purchase Price \$4,200 to \$7,200 Maritemance. Western Linon Date Frein Indiabet February 1960 Number Installation Technology 1960 Number Installation Technology 1971 (See Venous Price Page V-17)

(See Vendor Protte Page V-11)
INSE INTERNATIONAL
SECON (ZE.OG)
Desking
Ward Langilt Sign Operating Systems CPM, TLPISO Word Length: Irvo.
Querning System CPM. TLPBU.
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Languages Supported Color.
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Stemans Research Sci tyles
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Maximum Ort-Line Storage: 20M

Intrimum On-Line Storage: 20M feb informan I/O Peritz: 5 Wirmanication Proteopolic yesterocus serbedee: Third-party refer Safeta Terrise: Purchase refers: 50 600 to 56 600 settlemente: Western Lino to First Investigat. July 1962 settler femalistic. July 1962 settler femalistic July 1962 settler

0 d Longth: 16-bs resting System: CP/M SS, MS-

Operating System: CP/M SC, NC)-DOS Languages Supported: Cobol: Protran, Basic Protran, Basic; 256K bytes Maximum Memory: 1M bytes Maximum Memory: 1M bytes Multiple Users: No Maximum On-Line Storage: 20M Intellection types
Maximum UP Dertic 2
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Asynchronous
Destination: Thrif-party
Vender Sales Terms; Purchase
Purchase Price SASSO in ST, 600
Maintenance: Western Union
Dete Pirst Installed: In Jovanica 1981
Number Installed in Date: 100

SEES INTERNATIONAL SCOOK (ZILOG) Moro

Moro Word Length: 5-bit Operating System: CPM, TURSO DOS

Convoluting Systems CPML TURSO COSE.
Lampanages Supported: COSE.
Fortime Sear.
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Date First Installated Richmorte 1981
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Namber Installated Date: 3,000
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MINOTRONICS CORP.
SERIES 6000
Micro
Word Length 8-bit
Operating System: CPIN, TURBO
DOS

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Manther Installed to Date: 2,000 (See Vendor Profile Page V-12)

Incident Institute in Charge 2:000
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INTEGRATURE MUSICARIES
INTEGRATURE MUSICARIE

Amongs Detectorates Fee 2579

William Committee Committe

DAY First Resident Fabruary 1963
INTEL CODE.
INTEL COD

WYTELLIGENT SYSTEMS	Purchase Price: \$5,000 to \$7,800	Maximum Herrory: 125K bytes	INTER-CARE SYSTEMS, INC
COMP.			8200
INTECOLOR 3650		Maximum On-Line Storage; 100M	Micro
Desktop	Date First Installed: April 1977	Managem IIO Posts: 2	Word Langth: 8-bit Operating System: OASIS, CPIM Languages Supported: Cotor, Basic, Pascat, C
Word Langth: 8-bit	INTELLIGENT SYSTEMS	Maximum I/O Ports: 2 Communications Protectle:	Operating System: OASIS, CP:M
Operating System: FCS Languages Supported: Disc, Danc	CORP.	Bayrchronous	Languages supported: Cotto,
Manager Supported Unic, Date:	BITECOLOR 8360	Digitalismon: Third-carty	Material Manager State Series
Minimum Memory: 24K bytes Maximum Memory: 64K bytes	Deskion	Vender Sales Terms: Purchase:	Minimum Moreory: 256K bytes Maximum Moreory: 766K bytes Multiple Users: No
Multiple Uppers: No	Word Length: 5-bit	Bertol Leave	Mutteds Uners No
Maximum On-Line Storage: 460K	Operating System: CPIM	Purchase Price: \$8,000 to \$11,000	Maximum On-Line Storage: 1001
bytes	Operating System: CP:M Languages Supported: EXT, Disc.	Maintenance: Scrtus, Inc	bytes
Maximum I/O Porte: 2		Date First Installed November 1982 Number Installed to Date: 100	Maximum I/O Ports: 13 Communications Protocols:
	Minimum Memory: 56K bytes	Number Installed to Date: 100	Communications Protocols:
Asynchronous	Maximum Momory: 68K bytes	(See Vendor Profile Page V-12)	Bisynchronous
Distribution: Third-purty Yearder Sales Terms, Purchase Purchase Price: \$2,500 to \$5,000 Maintenance: On-site	Multiple Users: No		Distribution: Third-porty Vendor Sales Terms: Purchase,
Vendor Sales Terms: Purchase	Maximum On-Line Storage: 4 6M	INTER-CARE SYSTEMS, INC.	
Purchase Price: \$2,500 to \$5,000	Syles Maximum I/O Porte: 4	7300	Purchase Price: \$11,500 to \$15.0
American Maintenance Fee: \$50	Communications Protocols	More	Maintenance Socter Inc
Average Maintenance Fee: \$30 Date First Installed: March 1979 (See Vendor Profile Page V-12)	Atunchionous	Word Length: 5-bit Operating System: CASIS, CPIM	Maintenance Sortus, Inc. Date First Installed November 19 Number Installed to Date: 100
(See Manday Drolle Page M.17)	Distribution: Third-party Vendor Sales Terms: Purchase	Languages Supported Cobot	Mumber Installed to Date: 100
	Vendor Sales Terms: Purchase	Ranc. Pancal, C	
INTELLIGENT SYSTEMS		Main Manager 549 hades	INTER-CARE SYSTEMS, INC
	Maintenance: On-site	Minimum Memory: 64K bytes Meximum Memory: 126K bytes	
INTECOLOR 8050	Average Meintenance Fee: \$40 Date First Installed: November 1978		Micro
Desktop	Date First Installed: November 1978		Word Length: 6-bit Operating System: OASIS, CP1M Linguages Supported: Cobol Basic, Pascal, C
Word Longth: 8-bit	INTELLIMAC, INC.	Maximum I/O Ports: 2	Operating System OASIS, CPM
Operating System PCS	PL/7000K SERIES	Massimum I/O Ports: 2	Languages Supported Coco.
Languages Supported Disc. Basic			Make Pasca, C
Word Langth: 8-bit Operating System: FCS Languages Supported: Date, Boso Minimum Memory: 30K bytes Maximum Memory: 50K bytes Maximum Memory: 50K bytes Maximum Memory: 50K bytes Maximum Memory: 50K bytes	Word Lawrence 772 has	Bitynchronous	Basic: Pascal, C Minimum Memory: 256K bytes Maximum Memory: 766K bytes Multiple Users: No Maximum On-Line Storage: 1006
Medicale Lineary No.	Operation System I NOV DOS	Distribution: Third-party Vendor Sales Terms: Purchase.	Muchania Singer No.
Multiple Users: No Maximum On-Line Storage: 4 6M	Languages Supported Cotol	Terroor sames I sense PUTCTANE,	Maximum Ond ins Storens 1006
Defes	Word Length: 12-br Operating System: UNIX, ROS Languages Supported: Critical Fortian, Pascal, C: Ade	Perchase Price: \$10,000 to \$13,000	bries
Maximum L'O Porte: 4		Maintenance: Scrtus, Inc.	Syles Maximum (/O Ports: 13 Communications Protocols:
	Maximum Memory: 512K bytes Multiple Users: Yes: 8		Communications Protocols:
	Multiple Users: Yes. 8	Number installed to Date: 100	
Distribution: Third-party Vender Sales Terms: Purchase	Maximum On-Line Storage: 1G		Distribution: Third-party Yender Sales Terms: Purchase:
Vender Sales Teress: Purchase	bytes	INTER-GAME SYSTEMS, INC.	Vendor Sales Terres: Purchase:
Purchase Price: \$3,500 to \$6,500	Maximum I/O Ports: 9	7400	Rental, Leane
Maintenance: On-site Average Memienance Fee: \$40 Date First Installed: January 1977	Communications Protocole: X 25, Ethernel	More	Purchase Price: \$15,500 to \$22.5 Maintenance: Sortus, Inc
Date Cart testalists terrors 1977		Word Length: 8-bit	Control State Statement Street State Control State Sta
Does First Included: January 1977	Named Sales Towns Combane	Word Languages Supported CODD Languages Supported CODD Basic, Pascal C Minimum Memory: 64K bytes Maximum Memory: 128K bytes	Date First Installed November 15 Number Installed to Date: 100
SHIPPLLIGHTER SYSTEMS	Vendor Sales Terms: Purchase Perchase Price: \$22,000	Languages Supported: Cotot	
COMP.		Basc, Pascal C .	INTER-CARE SYSTEMS, INC.
INTECOLOR 6060		Minimum Memory: 64K bytes	
Desktop	Facility, Third-party	Multiple Users: No	Micro
	Date First Installed: February 1962 Number Installed to Date: 10 — 50 (See Vendor Profile Page 9-12)	Meastrum On-Line Storage: 10064	Word Longth: 8-bit
Operating System CPSM Languages Supported M-Bosic, Minimum Memory: 30K bytes Maximum Memory: 88K bytes	Humber Installed to Date: 10 - 50	measurem de-cree assuade: Jones	Operating System: CASS, CPIN Languages Supported: Cobol. Sec.; Pacca; C. Minteum Menury: 255K bytes Massirram Menury: 755K bytes Massirram Menury: 755K bytes Massirram On-Line Storage: 1006
Languages Supported: M-Basic;	(See Vendor Profile Page V-12)	Maximum I/O Ports: 2	Languagee Supported: Cobol.
Minimum Memory: 30K bytes	INTELLIMAC, INC.	Communications Protocols:	Basic: Pascel, C.
Maximum Memory: 86K Dytes	94/7000M	Desynchronous	Management apparently: 524% Divine
Multiple Users: No Meximum On-Line Storage: 4.5M	Del/1000M	Distribution: Theo-carty	Medicin Deservible
hadden cor-care persons. Com	Supermore Word Langth: 32-bit	Distribution: There-party Vendor Sales Torres: Purchase,	Manhouse Co. I has bloomed 1000
Maximum I/O Ports: 4	Operating System: LINEX 7, ROS Languages Supported: Cobol, Fortran, Pascal, C. Ada, Assembler Silleitum Memory. 256K bytes Maximum Memory. 1M bytes		between Con-Case strength 1900
Communications Protocols:	Languages Supported Critici	Purchase Price: \$14,000 to \$16,000	Meairson (O Ports: 13
	English Dancel C Arin Assembler	Maintenance: Sorbus, Inc.	Communications Protocols:
Distribution: Third-party Vender Seles Torres: Purchase	Minimum Memory: 256K bytes	Maintenance: Sorbus, Inc. Cate First Installed: November 1982 Number Installed to Date: 100	
Vender Seles Terms: Purchase	Maximum Memory: 1M bytes	Number Installed to Date: 1(0)	Distribution: Third-party
Purchase Price: \$5,000 to \$7,000 Maintenance: On-site Average Maintenance Fee: \$40 Date Pirst Installed: June 1978			Yender Sales Terms: Purchase:
Memmenance: On-site		INTER-CARE SYSTEMS, INC.	Rental, Lease
Average Maintenance Fee: \$40	bytee	7500	Purchase Price: \$14,500 to \$20.0
Date Pirst Installed: June 1978		More	Meintenance: On-site, Sorbus, inc
	Communications Protocols: X.25,	Word Longth: 8-bit	Purchase Price: \$14,500 to \$20.0 Matrianance: On-site: Sorbus. In: Date First Installed November 19 Number Installed to Date: 100
INTELLIGENT SYSTEMS	Ethernet	Operating System: CASIS, CP/M	Number Installed to Dele: 100
INTECOLOR 8350	Clabribusiee: End user	Languages Supported: Cobol;	INTER-CARE SYSTEMS, INC.
MIECULUM 8000	Distribution: End user Vandor Bales Terms: Purchase Purchase Price: \$47,500	Operating System: CASIS, CP/M Languages Supported: Cobol; Basis: Pascel, C Minimum Memory: 54K bytes Massimum Memory: 128K bytes	INTER-CAME SYSTEMS, INC.
Desktop Word Langth: 8-bit		Maniness Manager 1289 today	8509 More Langth: 8-bit Operating System: CASIS, CP-M Languages Supported: Cobol, Raoit, Pancil: C Minimum Momeny: 255K bytes
Consulter Sentent CCS	discountry Date to the destroy	Muddele Hears: No.	Wheel I seems the
Operating System: FCS Languages Supported: EXT; Disc.	degrosses. Return to manufacturing toolity. Third-party Date First Installed: February 1992 Number Installed to Date: 10 — 50	Mustiple Users: No Mestrum On-Line Storage: 1986	Operation System CASIS CP.M.
Reac	Date First Installed February 1962	bytes	Languages Supported Cobol
Minimum Marrory: 30K bytes	Number Installed to Date: 10 - 50	Maximum 1/0 Ports: 2	Ranc Pance: C
Basic Minimory: 20K bytes Minimum Memory: 50K bytes Multiple Users: No Mustiple Users: No Maximum On-Line Stonage: 4 thd bytes			Minimum Memory: 255K bytes Maximum Memory: 765K bytes
Multiple Users: No	INTER-CARE SYSTEMS, INC.		
Maximum On-Line Storage: 4 th		Distribution: Third-party Vendor Sales Torres: Purchase,	Maximum On-Line Storage: 1006
bytes	Moro	Vender Sales Terms: Purchase,	Maximum On-Line Storage: 1006
Maximum UO Ports: 4	Word Longth: 8-bit Operation System: CANK CENT	Person Pricer \$19,000 to \$24,000	Meximum I/O Perte: 13

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Vendor Salos Terros: Purchase, Rental, Lease	Average Maintenance Fee: \$150 Date First Installed: January 1963 (See Vendor Profile Page V-12)	Maximum Moreory: 325K bytes	Communications Protocols:
	Date Fred Metalled: January 1983	Maximum Montery: 325K bytes Multiple Usery: No Meximum On-Line Storage: 1254	Asynchronous Destribution: End user Vender Sales Torres, Punch
Maintenance Sortus, Inc			Vender Seles Terms David
Maintenance: Scrbus, Inc Date First Installed: December 1982 Mamber Installed to Date: 100	INTERBIL SYSTEMS, INC. INFORMATION PROCESSOR	Communications Protectis.	Lease
INTER CITY PAPERS, LTD.	Personal	Beyndroccus Destribution: Three party Vender Sales Terms: Purchase Purchase Price: \$1 995 to \$15,000 Maintenance: Three party Date First Installed: October 1979 Number Installed to Date: 10,000 - 50,000	Purchase Price: \$7,000 to \$ Maintenance: On one. Retur manufacturing lastly Assesses Maintenance Fee: Date Furst Installed to Date: 3 (See Varxior Profile Page V-1
PC-1	Word Longth: 5-bit	Detribution: Third-party	znanufacturing facility
PC-1 Micro	*Languages Supported: Cotot	Purchase Price: \$1,995 to \$15,000	Date First Installed 1977
Morti Length 8-bit Languages Supported: Assembler Minimum Memory: 64K bytes Mazimum Memory: 64K bytes Multiple Users: No Communications Protects: Assembles:	Personal Word Longth: 6-bit Operating System: CPIM Languages Supported: Cobot Forton: Basis, Pascal Minimum Mannory: 128K bytes Maximum Mannory: 128K bytes Multinam Namony: 128K bytes Multinam Namony: 128K bytes	Maintenance: Third-party	Number Installed to Date: 3
Minimum Memory: 64K bytes	Maximum Memory: 126K bytes	Number Installed to Date: 10,000 -	- (see various Prosse Page V-)
Multiple Users: No		50,000	JONOS LTD. JONAS 2100
Communications Protocols:	Maskman I/O Party: 3	ITHACA INTERSYSTEMS, INC.	- Portable
Communications Proteocols Asynchronous Desthalians: End user Desthalians: End user Purchase Purchase Price: \$1,500 Maintenance: CO-cute Date First Installage: 1976 Namber Installage: 1976 Size Vendor Profile Page V-12)	Meximum I/O Ports: 3 Distribution: End user Vendor Sales Terms: Purchase.	FITHACA INTERSTSTEMS, INC. ENCORE MPUSCOO Dentage	Portable Word Length: 6-bit Operating System: CP/M 2.2 3.0
Vender Sales Terms: Purchase	Vendor Sales Terms: Purchase.	Word Langth: 15-bit	3.0
Materials Price: \$1,000	Purchase Price: \$4,500	Operating System: XENCC	Languages Supported Date
Date First Installed: 1976	Maintenance: General Electric Co. Average Meintenance: Fee: \$47 Date First Installed: June 1962	Forter, Besc. Pescal	Languages Supported: Base Messages Microary: 54K bytes Maximum Microary: 128K byt Multiple Users: No Maximum De-Line Storage:
See Veryor Profite Date: 150	Average Maintenance Fee: \$47	Minimum Moreory: 54K bytes	Multiple Users: No
	(See Vendor Profile Page V-12)	Multiple Upper: Yes	Mexicum De-Line Storage:
SYSTEMS, INC.	INTERSIL SYSTEMS, INC.	Devision Werd Length: 18-bit Operating System: XXXXX Languages Exaportant: Cobo; Formar, Disso; Pissosi Meriman Memory; 54K bytes Has invers Memory; 255K bytes Maximum On-Line Steage; 1544 Patris	Maximum I/O Parts: 3
		Maximum I/O Ports: 8	Attendence Burntence
Micro Werd Langth: 6-bit Word Langth: 6-bit Devrating System: CPNs Languages Supported: Cobol, Forther, Baser, Places, C Minimum Marmory: 250K bytes Marinem Marmory: 250K bytes Marinem Marmory: 250K bytes Marinem Moreon: No Marinem Moreon: No Moreon: No Moreon: No Moreon: No Moreon: No Moreon: No Moreon: No Moreon: No Moreon: N	Moro Specific Application: Process	Marinan UP-Dries B Marinan I/O Putes B Commercetions Projectels: Asynchronous Synchronous Distribution: End user Vender Bales Terres: Purchase (See Vender Profile Page V-12)	Mastriam (10 Rents 3 Communications Proposeds Asynchronous, Bayrochronous Destructions, Tombard Services, Tombard Services, Tombard Purchase Prices 5,395 to 54 Maintenance Western Utron Date First Installate; June 19 Mamber Installate; June 19 (See Ventor Proble Page V-1)
Operating System: CP/M		Distribution: End user	Parthese Prine: \$1,000 to \$4
ortran Repr. Perret C	Word Longth S-bit Operating Dystem: CPM 22: CPM	Vender Sales Terms: Purchase	Maintenance: Western Unon
Brimum Memory: 125K bytes		(one service recent value n-12)	Humber Installed to Date: 10
Added Unor No.	Languages Supported: Fortran,		(See Versior Profile Page V-1)
Sentment I/O Ports: 4	Minimum Mornery: 64K bytes	Desirios	
Medigia Userce Fo. Installation CO. Petric 4 communications Protection communications Protection proprietorous, Septemberrous selectures From Churchana unchase Prior \$3,440 to \$3.90 installationamics Fore \$30 earing Maintenamics Fore \$30 earing Fore Installation September 600 employ Installation (s) Dutie 20 employ Install	3 0 Languages Supported: Fortran, Sasis: Piscoli: Assembler Ministrum Memory: 64K bytes Maximum Memory: 120K bytes Maximum Memory: 120K bytes Maximum On-Line Starage: 40M	EHCODE ZPUÇB Desistor West Langür, 6-br (DM, UPVA Desistor (DM, UPVA Languages Bayanetis Cobor Fortun, Reach Pascal Berlaman Memery 64th Oytes Mariaman Memery 64th Oytes Mariaman 10th Oytes 8 Mariaman 10th Oytes 8 Mariaman 10th Oytes 8 Mariaman 10th Oytes 8 Mariaman 10th Oytes 8 Communications Protocole Asynchronous, Synchronous Vendor Sales Torres (Parchaso Vendor Sales Torres (Parchaso	JOHOS LTD. JONAS 2500
Selfbution: End user	Meximum On-Line Storage: 40M	Landaneses Summerlant Critics	JONAS 2500 Portation Word Langel: 8-bit Operating System: CPIM 2.2 3.0 Languages Supported: Basic
endor Sales Terms: Purchase	Communications Protocols: SDLC; HOLC:	Fortran, Basic, Pascal	Operating System CPM 2.2
aintenance: On-site	HOLC:	Maximum Memory: 64K bytes	10
nts Cost Installant Control	Distribution: OEM Vander Sales Torries Purchase Plantage Price SS 500 to \$7 500 Blaintenance On-site Return to restricturing facility Date Part Installed: September	Multiple Users: Yes	Languages Supported: Base Minimum Moreory: 125r: byte Maximum Moreory: 125r: byt Multiple Users: No Maximum On-Line Storage:
162	Purchase Price: \$5,500 to \$7,500	Communications Protocolo:	Multiple Users: No
amber Installed to Date: 20 lee Vencor Profile Page V-12)	Melhtenence: On-site; Return to	Asynchronous Synchronous	Meximum On-Line Storage:
	Date First Installed: September	Yender Sales Terms: Purchase	Maximum I/O Ports: 3 Communications Protecols:
YSTEMS, INC. ATA CORSER 1	1962 Number installed to Date: 10 - 50	-	Communications Protocols:
NATA CORDER 1		ITHACA STERSYSTEMS, MC.	Dietributer: That-party
Word Langety Stat	INTERTEC DAYA SYSTEMS	More Word Langth: 8-bit Operating System: CPIM, MPIM, LINX	Vendor Sales Terms: Purchar
anguages Supported Oack	COMPLETAR DOMESTOR	Operating System: CPIM, MPIM,	Communications Protocols: Adjricthonous, Beynchronous Diebfluster: Third-party Vendor Eales Tomes: Purchas Parchase Price: \$5.995 Maintenance: Western Lincol
leadman Memory: 16K bytes	Ward Langth S.No.	UNIX	
Authore Upers: No	Operating System: CP/M	Lampunges Supported: Cobol, Fortran, Basic, Basic plus, Pagest, APL, PL/1, C	KONTRON ELECTRONICS
Communications Protocols	Languages Supported Cobot .	APL PLIT.C	Мето
Tomation of the Control of the Contr	Dealdop Weet Length: 8-bit Operating System: CPUM Lenguages Responsed: Cobot Forwar Basc. Places Hiriman Manuery: 305K bytes Maximum Minnery: 1-5M bytes Maximum Minnery: 1-5M bytes Maximum Minnery: 1-5M bytes Maximum On-Line Storage: 1-448) bytes	APL, R.I. G. Microsopy, 259K bytes Macrosom Memorary; 1M bytes Managed March 1986, 1M bytes March 1986,	2000 Micro Ward Langely 8-bit Operating Systems KOOS Languages Supported: Pasca Assenciar Minimum Microsry: SAK bytes Masterium Microsry: SAK bytes
ender Sales Terms: Punchase	Maximum Mornery: 1.5M bytes Multiple Usage No.	Multiple Uppers: Yes, 6	Languages Supported: Pasce
urchase Price: \$1,995 to \$2,200	Maximum On-Line Storage: 14414	Communications Protection -	Assembler Memory: 64K bytes Marinum Memory: 64K bytes Multiple Upara: Yes Mastinam On-Line Storage: 3
versoe Meintenance Fee: \$25	Communications Protector	Asynchronous Distribution (DEM	Maximum Mornery: S4K bytes
ete First Installed: Ame 1979	Asynchronous	Yender Sales Terms: Purchase	Masteran On-Line Storage: 3
minor eventure in Date: 500	Vendor Sales Terror Purchase	Purchase Price: \$7,000	bytes
ELECONTROL COMP.	bytes Communications Protectic Asynchronous Derthister: Third-party Vendor Sales Terms: Purchase Purchase Price: \$3,000 Maintenances: Third-party Onto: Price Installed: January 1661 Number Installed: January 1661	Date First Installed: January 1982	Dyles Maximum I/O Perts: 4 Communications Protocols: Asymptotics: East user
ERIES 860	Date Piret Installed January 1661	1,000 Installed to Date: 500 -	Asynchronous
kro	Mumber Installed to Date: 10,000 - 50,000		Vender Sales Terms: Purchas
ford Langth: 5-bit	(See Vender Profile Page V-12)	TTHACO, INC.	Lease
chinem Memory: 24K bytes	INTERTEC DAYA SYSTEMS		Purchase Price: \$17,000 to \$4 Maintenance: On-oits Antenapo Maintenance Fee: \$ Date First Installed to Date: 4.5 (See Vendor Profile Page V-12
profile Application: Training fred Langth: 6-bit Minimum Blameny: 26K bytes lastmam Blomery: 64K bytes Artiple Users: No ownsectodates Protocols: systytomous	CORP.	Arranders	Average Maintenance Fee: \$
orrennications Protecols:	DUPERBRAIN	Word Langth: 8-bit	Number Installed to Date: 4.5
Serfection: Enduser	Word Langth: 8-bit -	Language System Dillit.	(See Vendor Profile Page V-12
let/fluition: End/user sinder Seines Purchase withese Price: \$28,000 let/fluitionsiese On sits; Return to enufacturing facility	Desirop Word Length: 8-bit - Operating System: CPIM Languages Response: Cobol, Forter: Basic, Pascal	Motivo Specialistic Data Acquisition Data Acquisition Moral Languis 8-bit Operating Systems Didgs. Languages Supported Sent Statement Sent Statement Sent Statement Sent Statement Sent Sent Statement Sent Sent Sent Sent Sent Sent Sent S	KONTROW SLECTROMICS
eistenance: On etc. Return to	Languages Basported: Cobol, Fortrar, Basic, Pascal Minimum Mercery: 64K bytes	Maximum Memory: 512K bytes	KDS Moro Word Langth: 16-bit

Micros Operating System: UNIX Languages Supported: Pascal

ther am Memory: 1M bytes am Memory: 1M bytes in Users: Yes, G are On-Line Storage: 20M bytes Maximum I/O Porte: 6 Communications Protocols: Asynchronous: R6-232 Debribution: End user Vandor Sales Terms: Purchase

hese Price: \$22,000 to \$50,000 tenance: On sits age Maintenance Fee: \$300 First Installed to Date: 10 - 50 bee Installed to Date: 10 - 50

ORATORY NHOLOGIES CORP. fig Application: Laboratory Use Word Laught: 15-bt Operating System: IRIXX-86, CPM 85, Let-2016

MARAGEM MARAGE 86. MS-DOS Languages Expected: Fortan Pacid: FN-MS Microsoft Bens Minimum Memory: 350K bytes Maximum Memory: 350K bytes Maximum Memory: 550K bytes Maximum Cer. Line Storage: 10M bytes. Maximum On-Line Biorage: 10M bytes.
Maximum ILO Perts: 4
Communications Projectors: Asycchronous Vender Sales Terms: Purchase Punder Seles Terms: Purchase Punder Seles Terms: Purchase Punder Seles Terms: Purchase Punder Seles Terms: Punder Agricultural Seles Final Nutural Agricultural Seles Seles Terms: Punder Punder Seles Seles Terms: Punder Punder Seles Macromarce On-old U.S. Signature State Sta INDIGIDO :
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Blamman Moreory: 1280 bytes
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innum (IV-Perts: Protection
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intuitio chloroxia. Sy chronical distriction of chronic Micro Wood Length: 46-bit Operating Byssen: Proprietary Languages Supported: English Bissense Merceny: 54th bytes Bissense Merceny: 128K bytes Bulapia Useric No Maskinsen Oc-Line Storage: 1.2M bytes

Maximum I/O Ports. 2
Communications Protocodis:
Asymptotication
Asymptoticatio Date First Installed Procention 1950 in Vision 1950 105 in Vision 1950 in Vision

Blazeman Co-Line Storage: 80M by195
Massimum I/O Ports: 20
Communications Prefereds: Asynchronous
Distribution: Third-party
Vendor Sales: Termin: Purchase
Purchase Price: 519,170
Blazimanous: Third-party
Date Finis I tensifies: Coston: 1980

Maximum I/O Pertis: 2 Communications Protocols: Synchronous Destribution: End user Verdor Salest Terms: Purchase Parchase Price: \$11,000 to \$46,000 Management Chryste

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Mai SYSTEM 410 More Morel Longth: Bost Word Longth: Bost Operating System: BOSSVS Maumen Memory: 2M Dytes Maumen Memory: 2M Dytes Maumen Demory: 2M Dytes Maumen Demory: 2M Dytes Maumen De Line Storage: 144M

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Marrienance: Arres Technical Service Date First Instelled 1981 Number Installed to Date: 100 — 500 (See Vendor Profile Page V-13)

ABIT WE DETERMATIONAL BET 9000 HTML BET 9000

engific 8-bit ing System CP/M, MP/M, R.

Vender Sieles Tramer Purphuse (1994) von 1994 vo

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MEPOOR INTERNATIONAL,
MC.
TIGER I
Supermore
Specific Application: POS
Word Length: 8 bit
Operating System: CPIM MPIM
Languages Supported: Cotol
Forham Static Places PL-1, C,
Assembling Scientifier Briston Mersony, GRK bytes Basterum Mersony: £28K bytes hatiple Users: Yes lestreum On-Line Storage: 8 1G 1044

MICROGOSPUTER TROMINGLOV, INC. HOD IN PLUS DOWNING SPARKE TRS-DOS, DOS SOUNCHOS PLUS CITY TRS-LINGUIS RESPONDED. CODO, FORM SEASON, PARCE STATE SEASON SEASON, SEASON SEASON

Maximum Memory: 64K bytes Martiple Users: No Martiple Users: No Dyes on Ore-Line Storage: SM Dyes Maximum LO Papies: 16 Communications Protection Destroyation of Communications Protection Destroyation of Communications Destroyation of Communications Destroyations of Communications Destroyations of Communications of Communications International Communications of Communications Destroyations of Communications of Communications of Communications Destroyations of Communications o

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MICRO SOURCE, INC. MICRO SOURCE, INC. MICRO Operation Statem: CP.M. MACOOP-IsC
Micro
Operating System: CP-M: Usex
Languages Supported: Cocol:
Fortran Basic Basic plus Pascal
RPO, PLJ 7
Memmon Memory: GHI bytes
Macament Memory: GHI bytes
Macament Memory: CHI bytes
Macament Moreory: 10M
Macament On-Line Storage: 10M
Macament On-Line Storage: 10M

On-Line Storage: 10
bytes

Maximum I/O Ports: 8
Communications Protection
Asynchronous SOLC, HOLC
Distribution: CRM
Vendor Sales Terms: Purchase,
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Parts

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Levis indor Sales 18-me, 1850 withere Price: \$7.325 antisenence: Return to anniaturanty facility. Third-party anniaturanty facility. Third-party anniaturanty facility. Third-party anniaturanty facility.

MICRO SOURCE, ISIG.
MICRO SOURCE, ISIG.
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Maximum OH-Live Sterage. 10M bytes
Maximum I/O Portic 8
Communications Protocols: Approximation. Synchronicus. Synchronicus. Synchronicus. Synchronicus. Synchronicus. Synchronicus. Synchronicus. South C Polic Desbehalon: OEM Vendor Seles I Former. Purchase Leaze Maintenance: Please 10 Maintenance Please 10 Maintenance Please 10 Maintenance Please 10 Maintenance I Selezia I Maintenance I Maintenance

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ronous, Synchronous, estent End user see Price: \$5.000 snance: Return to lackung facety "wetaffect: September

U-132

of Length: 8-bit
rolling Spallern: CODOS, CPNs.
guages Supported: Cobo!
ron: Basic Pascal C Forth
rolling Spallern: 60K Syncs
rolling Memory: 1 3M Syncs
rolling U-12 Spallern: 60K Syncs
rolling Spallern: 60K Syncs
rolli aurrum On-Line Storage: 4M ries internetications Protocols: synchronous Synchronous stribution: End user index Sales Terms: Purchase urchase Price: \$3.350 to \$6.000 sentanance: Return to sentacturing facility interfere treatment of protocols and protocols and protocols and protocols protocols

Series 1000 Deship Weed Length: 16-bit Operating System: STARDOS, BASIC 4 CPM, MS-DOS —a Supported: Cobis mum Memory: 125K bytes mum Memory: 512K bytes iple Users. You 5 imum On-Line Storage: 14M

Measure On-Line Sterage: 1441
yord:
yord:
Massime I/O Ports: 2
Commencateop Protocols:
Asynchronous Synchronous,
Byrynchronous
Destribution: Third-party
Vestor Salest Serves: Furchaire
Mantenance Chorde: Result to
manufacturing bodiley. Desires
Data Plast Initiative I/O —
Mamber Installed Inventor 1902. 500 (See Vendor Profile Page V-13)

BECINO V CORP.
BERIES 3000
Deskrip
Word Langer 16-bit
Operating System: STAROOS.
BASIC 4 CP M MS-DOS
Languages Bupported: Cotot

Memory: 128K bytes i Memory: 114 bytes Jeers: Yes: 11 on-Line Sterage: 70M

. Word Length: 16-bit Languages Sapported: Pancel ML-STO-1792A Marimum Memory: 64K bytes Maziges Memory: 64K bytes Maziges Memory: 64K bytes Maziges Memory: 60K bytes Maziges Memory: 60K bytes Maziges Memory: 60K bytes As

Commismostrona Protectia
Asynchronous End user
Destributions: End user
Vender Sales Tarres: Purchase
Purchase Proces 506 550 10 530 000
Mathematics Charles
Date Final Installed: August 1962
Number Installed: August 1962
(See Vender Medie Plage V-13)

MIKROS SYSTEMS CORP. MAS 1756/D Moro Word Length: 16-bit Languages Supported: MIL-STD-Languages Supported: MIL-STD-1750A Maximum Memory: 64K bytes Maximum Memory: 64K bytes Multiple Users: No Commencations Protocols:

Communications Protocols; Asynchronous Distribution Civil user Vandor Beles Termis: Purchase Punchase Pices 332,000 to 538,400 Maintenance: Chr. side Date First Installed: Juruary 1985 Number Installed of Date; 10 — 50

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MONAMIX DATA SCIENCES
CORP.

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Word Length 8 bit
Coperating System Proprietary
Lenguages Supported Cotto.

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bytes

MOMANY DAYA SCIENCES
CORP.
SCHICS 21 21 129
Wood Processing system
Wood Processing system
Model Processing System
Languages Supported: Cobol,
Model Marwarn Memory: 512K bytes
Matthic Users: Yes, 39
Matthic Users: Yes, 39
Matthic Users: Yes, 39
Matthic Users: Yes, 39
Matthic Users: Yes, 30
Matthic Strenge: 156M

Measures On-Line Storage: 156 by493 Communications Protocols: Asynchronous, Baynchronous, SDLC, SDLC-SNA: X25 Detributions: End user Vandor Sales Terms: Purchase Rentz Lines Purchase Price: \$7,900 Mentalerance On-sis Bronce dagnotics Date First Installect: 1977 Date First Installect: 1977

Date First Installed: 1977
MONAWK DATA SCIENCES
CORP.
SCRES 21 21/40
Word Procrising system
Word Langer: 5-bit
Operating System: Proprietry
Languages Supported: Cobot.
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Micros Magnery, 550 bytes
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Magnes Magnery, 550 bytes
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Asynchronous, Bayretimonous
SDLC, SDLC, 59LC, 59

Operating Systems NSTAR CPM, CPM Operating Systems (CDM) on Start CPM (MACRO SHEE) CPM (MAC Advantages and Control of the Contro

MOMAWK DATA SCIENCES CONP. Series 21 21/80 Word Processing system Werd Languages Supporter Languages Supporter: Cobol Model

SH MSTAR CPM

Asynchronous Baynchronous Distribution: End user Vendor Sales Terms: Purchase Rettal: Leae MainMannos: On-sto: Remote diagnosicsi Date First Installed: July 1963

Date Treatment Apr 1960
Doctor Treatment Apr

MOLECULAR COMPUTER SUPERMICRO &

Word Length: 8-bit Operating System NISTAR CPM

Distribution: OEM Vendor Sales Terms: Purchase Purchase Price Sales S Multiple Useric Ho Massiman On-Line Storage: 13 2M Uyes-Massiman 1/O Ports: 3 Communications Protocols: Communications Protocols: Communications Protocols: Communications of Communications Fundos Rades Terrent: Publishes Purchase Priorit: 57 CO Massimance: Februm to manufacturing Sacting Date First Installable: Anne 1901 mumber tretailed to Date: 12 MONDOLITHING BYSTEMS CORP. MISC-4792 Micro Word Languit: 16-bit Operating System: DEC, RSTSE; RSK-11, UNIX. Languages Supported Fortron Date: Date: place! Harman Memory: 100 bytes-White I was a service of the control imum On-Lune Blorage: 240M 5 mmm I/O Ports: 67 mmmseatoms Protecots: nothronous, Solici, SDLC: SNA, studies OEM for Sales Terms; Purchase hase Price: \$21,000 to 1,000 oob enance: On-site, Return to acturing facility ge Meintenance Fee: \$250 first Installed: June 1983 Maximum De-Line Storage: 13 bytes bytes Maximum I/O Press; 3 Commendations Protocols: Asynchronus Distribution: End user Vereion Sales Torres: Purchase Proce 36 000 Maximum Playm 10 maximum protocols Des First Inselley Apre 1961 Des First Inselley: Apre 1961 Moro Word Length: 8 bit Operating System: NISTAR CRIM CRIM MS P M 85 Anguages Supported Cotol Anguages Supported Cotol Assoc PL1 MAC RMAC CB50 Binitruth Merrory Sct. bytes Bacterium Merrory; 4M bytes Autiple Users: Yes, 54 Bacterium Ov-Line Storage: 272M muniment Der Line Biorage: 272M United Maximum I/O Perts: 131 Communications Presceler. Asymchronius. Spitchenous Biopertronous. SDLC: SDLC:SNA Distribution: OEM Yender Sales Terms: Purchase Purchase Price: \$25,000 to \$175,000 00 mance: On site fleturs to scrumg facility ps Maintenance Fee: \$260 trat installed: September Agentium IO Ports: 4 Communications Protocols Asynchronous. Synchronous Distribution: COM Vendor Sales Terms: Purchase Purchase Price: \$10,000 to \$14,000 Maintenancy: Eurille Tage Maintenancy: Eurille Tage Date Pint Installed to Date: 28 Newdor Installed to Date: 28

INTERN Memory: 64K bytes digie Users: No INTERN On-Line Stenage: 610K Maximum On-Line Storage: 439k bytes Maximum I/O Ports; 256 Commanications Protacote: Asynchronous: Synchronous Dastelution: Third porty Vendor Sales Termin: Purchase Purchase Price: \$2,656 to \$4,195 Maintenance: On-Ste -(See Vandor Profile Page V-54)

MMLT-THOM S YSTEMS, INC.

MT 560

Nositiop Desiriop Schol
Operating Systems: CP M
Languages Supported: Cotol
Fortran Bass:
Mainteen Mercory: 64K bytes
Mainteen Mercory: 11M

Maximum On-Line Storage: 11M byte: Maximum AD Puris: 2 Communications Proteonia: Approximation Synchronous, Synchronous, Synchronous, Synchronous, Approximation: Synchronous, Synch

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Moro Moro Langth: 8-bri Operating System: TUPISO DOS Languages Supportset: Cobol. Forman Basis, Pascal C Minimum Memory, 64t bytes Maximum Memory, 64t bytes Maximum Memory, 64t bytes Maximum Moro, 104t bytes Maximum On-Line Storage, 40M Maximum On-Line Storage, 40M

Dylasi Income ItO Ports: 4
Basimum ItO Ports: 4
Basimum ItO Ports: 4
Communications Protocols:
Asylchronous
Distribution: OEM
Vendor Sales Termit: Purchase
Purchase Principe: 14 000 to \$14,000
Maintenance: Third porty
Date First Installed May 1953 7

regit: 8/16-bit ...

MS-DOS: CPIM 56
Languages Supported: Cobol Basic, Places
Minimum Memory: 512K bytes
Mazimum Memory: 512K bytes
Mazimum On-Line Storage: 96M
bytes
Cestematications Protocols:

Maximum On-Line Storage 96M bytes Certemanications Protocola: Asynchronous Distributions of The Sparty Vender Sales Termic Purchase Purchase Price: \$2,000 to \$3,340 Mantenance: Qn-sire Date First Installed: April 1953 (See Vandor Protile Page V-14) HIAGARA SCIENTIFIC, INC. Bladdina autoritat regimenta (Septimenta Septimenta Sep

Ger Visidor Project VI (4)

MEC INFORMATION SYSTEMS

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MRC ELECTRONICS 53 Mcro Word Length 5-bit Operating System CASIS, MP.M.-CP.M. Vendor Sales 1emm. Pa-Lisse Parchase Peice: \$4 300 Marrienance: On-sie: Third-party Date First Installed: July 1982 (See Vendor Arolle Page V-15)

The state of the s (See Vendor Phoble Align VIII)

MECI INFORMATION SYSTEMS
ASTIVA 200

Word Length: 16-bit
Conventing Systems (TOG)
Languages Supported: Codo;
Languages Suppo

Meanism Ort-Line Storage: 9 2M byth! Meanism IIO Peris: 3 Commanisations Protected: Asynthonious Synchronous Destination: Third-party Vendor Bales Terms: Purchase. Lésse Price: 85,500 Purchase Price: 85,500 Purchase Price: 85,500 Purchase Meintenance: On-site Third-party Aveninge Meintenance: Free: 390 Peris Print Standards June 1992

(See Vendor Proble Page V-15)

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AND STATE OF STAT See A Comment of the Comment of the

Maintenance: On site. Remote cognostics. Return to manufacturing toolity. Date First installed: January 1978 Number Installed to Date: 10,000 — 50,000

Meanman On-Line Biorego: 166M bytes Meanman NO Pearls No Pearls

MON LIMEAR SYSTEMS, INC.
KAYPRO 19
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Date by designed over 1999 1991

NOV. Linet An S Y TERM, NHC.
LAYROJ C. Dakston, Dist.
Layroj C.

NORDEN SYSTEMS

Melanum Memory: 64 bytes Macimum Memory: 646 bytes Macimum ID Perins: 11 Distribution: End user Vender Sales Terms: Purchase Purchase Price: 515 500 to \$40,000 Melanum ID Service: 1078 (See Vender Perins ID See Vender See (See Vender Proble Page V-15)

Price: \$4.795 to \$13,000 ce: On site installed: November 1981 or Profile Page V-15)

gen: 8-be Teacher: TES MS-DOS

this Box DOS, CPM. pen Supported: Cobol Basic: Pascal a Memory: 54K bytos-m Memory: 326K bytos Usars: No m On-Line Storage: 15M

nd Longth: 8-bit Heling System: TSS/C, DOI: 14 CM

You Ask: Which Professional Computer should I buy for my business?



featiment I/O Ports. 1 Intributions: End user lender Sales Terms. Purchase, lender Sales Terms. 25 500 lenders. Process 25 500 lenders. Process 25 500 lenders. Process 25 500 lenders. 25 500

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OL YMPHA M. S. A., 1900.
PONTABLE COMPUTER
POYADA

Doparating System: CNAP

Languages Supported: Base, Forth

Remanua Memory: 110K Cytos

Maxemum Memory: 10K Cytos

Maxemum 10 Porte: 6

Communications Protocols:

Communications Protocols: Maximum DU PRICE 8 0 Communication Protocels Asynchronous Distribution: Transporty Vendor Sales 7 terms Purchase Prachase Peach Sales 100 to \$1,700 Maintenance Peach 100 to \$1,700 Maintenance Peach 100 to \$1,700 manufacturing placed June 1982 Date Placed to Date 1,000 = 5,000 Maintenance Peach 100 to \$1,000 = 5,000 Maintenance Peach 1,000 = 5,000 M

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Maximum I/O Peris 6
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Communications Proteocle:
Asynchronous
Destituter: Throi-perly
Vander Safet Terms: Purchase
Purchase Prec 58:850 to \$2,350
Maintenance: RCA Corp
Dest Pivel Installed to Dete: 1,000
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DNYX SYSTEMS CS001A Moro Mord Longth: 8-bit

ONYX SYSTEMS
SURDANCE
NACO
Word Langth: 5-bt
Operating System: CPML OASIS
Languages Supported: Coox

Operating Bystem, CPIM, CASIS, MPM, Languages Supported Cobol, Fortion Basic, Maneton Macrocyr, 128K bytes Mealman Hermary, 126K bytes Masters On Line Storage; 21M bytes, 128K bytes, 128

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Word Langitt-Shirl
Operating System: CPIM, CASIS,
Languages Supported: Cobol
Forvian Bean
Reviews Memory: 1260: Dytes
Maximum Memory: 2000: Dytes
Maximum Collins Storage: 4040
bytes

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ONYX SYSTEMS ONYX SYSTEMS SYSTEM 2000

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Operating Systems MP-M 86
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Massing U Meastrum On-Line Storage: 4(M)
types
Maximum I/O Perile: 6
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Asymchronous
Distribution: Third-party
Vendor Sales Terms: Purchase
Purchase Postocols: 913,900 to \$17,400
Maintenance: RCA Corp.

Maximum I/O Purits 5
Maximum I/O Purits 5
Communications Presectois:
Asynchronous
Clearbuster: Third-party
Vendor Sales Terms: Purchase
Purchase Price: \$7 250 to \$11 500 ONLYX SYSTEMS SYSTEM 3000 Mairo Word Langth: 15-bit

Fortran, Basic Manmum Memory: BIK bytes Meximum Memory: BIK bytes Multiple Users: No Masimum On-Line Storage: 21M bytes Operating System CASIS 16, BBOS Languages Supported: Coloci Basic Memory: 61x bytes Measurem Memory: 51x bytes Masterem Memory: 51x bytes Masterem Con-Line Storage: 60M Staccimen On-Line Storage: 60M

Communications Protocols: Asynchronous Distribution: Tendsparty Vendor Sales Tennic Purchase Punchase Price: 56 950 to \$0.450 Maintenance: RCA Corp Date First Instellect. June: 1901 Namber (installect June: 1901 Namber (installect June: 1900 — 5 000 Massiman Un-une stateger own bytes. Massiman II O Perisi. 5 Communications Prospecity. Asynchronous Desibbleson: Third-porry Yender Sales Terms. Purchase Parchase Price: \$12 250 to \$18,500 Herrimanscer. PCA Corp. 5 000
ONYX SYSTEMS
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Word Length: 15-bit
Operating System U.KX
Lenguages Supported: Cubol,
Fortran, Basic
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Marienten Manning; 250K Oyles
Marienten Orl-Line Storage; 21M
Oyles
Maximum Orl-Line Storage; 21M
Oyles
Maximum ID Paris: 5
Maximum ID Paris: 5
Maximum ID Paris: 5
Maximum ID Paris: 5
Maximum ID Paris: 6

Newtonance: RCA Corp
OWYX SYSTEMS
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Word Langth: 15-bit
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Communications Protocols:
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Destination: Third-party
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Purchase Prices \$13,500 to \$16,490
Meletinasecci. RCA Corp.
Date Pires Installed: June 1981
Number Installed: June 1981
Number Installed So Date: 500 — 1,000 Manneance: RCA Corp GNYX SYSTEMS SYSTEM 8000 Word Length: 18-bit Mannean Menney; 256K bytes Maximum Menney; 256K bytes Maximum Menney; 256K bytes Maximum On-Live Storage: 100M Communication Protection: Communication Prote

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George Godeller Godell Maximum On-Line Berragus
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Maximum I/O Pietts 3
Commencesione Presecute:
Asynchronous
Desmission: Throt-party
Vender Sales Terms: Prochase
Pietches Prince \$5.550 to \$11.550
Maintenance: RCA Corp. OSM COMPUTER CORP. Desktop
Werd Langth: 8-bt
Operating System MuSS: CPIN
Languages Supported: Cobol.
Forten, Sacc. Recrait FU I.
Minimum Hemany: 64th Cytes
Massirram Mammery: 300K bytes
Modified Users: Yes -4
Messirram On-Line Storage: 30M

Maximum 10 Portin 12 Communications Principal Values Annual Profession Control of the Control of noun-files region to the page of right (See Ventor Provide) region of right (See Ventor Provide) region (See Ventor Provide) region (See Ventor Provide) region (See Ventor Vento manufacturing floring
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Ne Users: No mm On Line Storage: 500K um 1/0 Porte: 3 Communications Protection Protection Approximate State Purchased Protection Protection Protection State State Purchase Protection State St

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Number Installed to Date: 1,000 —
5,000
(See Vendor Profile Page V-16)

TE INFORMATION

PS002 Mord Langth: 15-bit Operating System: MS-OOS 1 25 Languages Supported: Cobol. Fortran Base, Pacol. C Minimum Manager, 128K bytes Maximum Memory: 256K bytes Multiple Users: No Maximum On-Line Storage: 640K Maximum On-Line Storage: 640K

bytes
Communications Protective, 640K
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Communications Protective,
Beynchronous, SDLC,
Beynchronous, SDLC,
Beynchronous, SDLC,
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Protective SL, 195
Destination SL, 195
De

ro ed Longth; 16-bit entring System; MS-DOS 1.25 spages Supported: Cocci. trans. Basic, Proced. C element Memory; 128K bytes, simum Memory; 25K bytes ingle Users; NO simum Memory; 25K bytes ingle Users; NO simum On-Line Starage; 640K.

immications Protectes: chronous, Synchronous, chronous, SOLC flustee: Therboarty des Sales Termic Purchase hase Price: 54.740 seesence: Western Unon First Installed, January 1983

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Languages Bioported On-Basic Massimum Berony, 1287 June Maliple Users: No Maliple Users: No Maliple Users: No Commenceation Photocist Commenceation Photocist Commenceation Photocist Commenceation Photocist Disperiorous, SDLC, MSC Biophotrous, SDLC, MSC Wender Sales Terms, 500 to 500 to Disperiorous, SDLC, MSC Wender Sales Terms, 500 to 500 to Marriage Massimono Fee: \$150 Marriages Condition of the SDL 100 Dise Vender Photo Page V-189 Joe Vender Photo Page V-189

100 product Prote Page V-10 proceedings (Section 2.0 cm).

Description (Section 2.0 cm).

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PHOENIX SIGITAL CORP. SERIES 1000 Micro Word Length: 15-bit Operating System: OS-9

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Languages Supported: Dusic.
Pascel C. Assembler
Masterum Memory: TM bytes
Multiple Users: Yes: 10
Masterum De-Life Storage, 160M
bytes Distribution: End user Vendor Sales Terrer Prorbins Masimum I/O Porte: 100 Communications Protocols: Synchronous, Baynchronous SOLC: HOLC

Synchronous, Beynchronous, SOLC:
HOLC:
Diserbeyaner, Trad-pairy,
Vescolo Seles Framer, Purchase,
Rental, Lesse
Purchase Price: 56 good to \$15,000
Average Maintenance Fee: 560
Date First Indexed: 1979
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MIC.
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Maximum On-Line Sterage: 520M bytes Maximum 10 Perix: 4 Core sunfacines Protecula: Asynchronous Disvisionier OEM Vendor Sales Terms: Minum 10 marutatumg Section Protection 1961 Number Ministration Country 1961 Number Ministration December 1968 Number 1

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More Langui, 16-24
Copuniting System; 167-11/128; +185.5-11, MAMPA, 1675-26
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WHITE Langue 5-bit
Operating System: CPM 2 2
Languages Supported Fortran,
Basic, Pascis
Maintenan Mannery, 50% bytes
Maintenan Memory, 64% bytes
Maintenan Montelle Stereige: 1M
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Communications Protocols.
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Purchase Price: 54.457 to 58.800
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POLVASORPHIC SYSTEMS 5013 Desktop Wood Leeght 8-bit Operating System: CPM 2.2 Languages Supported Forms Beaut, Passin Blastman Memory: SKK System Maximum Memory: SKK System

se Price: \$5.595 to \$11,000 nange: Return to cturns lacity: There-party installed: 1977 r Installed: to Date: 500 ---TWIN SYSTEMS.
Micro
Word Langth, 8-bit
Operating System: CPIM 2-2
Langtaings Supported: Fortran,
Sacc. Pedical
Macrimum Memory, 32K bytes
Mastimum Memory, 104K bytes
Mastimum Strings; Yes. 2
Mastimum On-Line Storage: 2-5M D89 Per Inselhede Agra 1903.
PRIO-109 CHEN THE TOP 1977
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PRIO-109 CHEN THE TOP 1977
ROOT LINES TO THE 1 Date First Intention: April 1963
PRO-LOG COME.
ABI-1-202
Word Length: Birl
Word Length: Birl
Word Length: Sirk
Word Length: Sirk
Word Length: Sirk
Honorae
Worder: Color
Hamping System: CPM
Length: System
Maximum Memory: SMK System
Memory: SMK Does Prot Installed, April 1963

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Minimum Menory: 64K bytes Multiple Users: Yes: 2 Massimum On-Line Secreta: 320M

Operating Systems (2003)
Languages Supposed State
Product
Measure Measure (11 St. 1945)
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100 Internation Page No.17

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Distribution: Thrid party
Yender Sales Terms: Purchase.
Lissia
Purchase Price: \$2,995 to \$7,845
Marrierance: General Electric Co.
Date Parts Installed: October 1982
Number Installed to Date: 500 — 1,000

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COMPUTERWORLD BUYER'S QUIDE

PEI TECH 2TM 600 Moro Word Langth: 8/16-bit

PSI TECH GTC 1609

Operating System CPIM. MP As Languages Supported Codel. Fortran Basic Pascal C Manisters Memory, 564 Syste Maximum Memory, 1086 Systes Maximum Ovi-Line Storage: 6M Systems Vol. Peris: 4 Communications Protocols. artum On-Line Storage: 6M 6 6 mm 10 Ports: 4 irman 10 Ports: 4 revenuestime Projecols: retrorous. Synchronous relation Termit: Purchase Hasen Price: 54 905 internation: First Jerry Jackstury (Intelly, Thresporty First Installed, January 1983) Date First Meanland: 1975
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COMP.
BLACK BOX 3/295
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Word Langly: 5-31
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Languages Experies: Cobo.
Fortran, Base: Places Pt/1
Machines Marriery: 64K bytes
Machines Memory: 60K bytes
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MEYMOLDS & REYMOLDS CO.
VM NET"
WHITE STATE OF THE STATE OF THE

Dytes
Maximum I/O Portic 15
Communications Protocols:
tayochronous, Beynchronous
Sarbhulson End user
Tender Sales Terma: Purchase
worksas Proc: \$17,000 to
100,000 Parchase \$100,000 Maintenance: On-side Average Maintenance Fee: \$350 Date First Installed: July 1982 Date First Installed: Date: 100 —

DOSO
DESAND
Word Langth: 16-bit
Operating System: CP-M 66
Languages Suspenfed: Cobol,
Forkan Basic Pascal: C
Microway Basic Pascal: C
Microway Basic Pascal: C
Microway Basic Pascal: C
Microway Memory: 150K bytes
Microway Memory: 150K bytes
Microway Co-Line Storage: 10M
Microway Co-Line Storage: 10M

Meanum I/O Ports: 15 Communications Protocols: Asynchronous Synchronous Distribution: OEM Vendor Sales Terms: Purchase Punchase Price: 55 500 Meantenasce: Return to manufacturing facility
Date First Installed: Septémber
1982
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Massis SANYO BUSINESS SYSTEMS CORP. MIC 2000 DMARQ SCRENTIFIC MICRO SYSTEMS, INC. DSX-11

Word Length: 8 bit Operating System: CPM Lenguages Supported: Basic Minimum Memory: 64K bytes Maximum Memory: 64K bytes Multiple Users: 145 Mastimum I/O Ports: 2 Communications Protecols: More Word Length: 46-bit Word Length: 46-bit Operating System: RT-11; URX RSX-11M RSX - Lenguages Supported: Cobol Fortran: Bace: Flacea: Assembler Bitelmann Memory: 208 bytes Backware Memory: 208 bytes Backware More Uni

Contractications Protocols:
Asynchronous
Costribution: Third porty
Vendor Sales Terrisi: Purchase
Purchase Price S3.495
Marrisonaece: Third-porty
Date First Installed: May 1982
Number Installed to Date: 600 –
1000 Maximum On-Line Storage: 604 bytes bytes Maximum (i) Drote: 15 Communications Protectica Asynchronous, Synchronous Distribution: Christian Studies Vendor Sales Terms: Purchase Punchase Pros \$10,000 to \$16,000 Mantenance: On site 1945 First Prinsibled: Am 1979 Number Installed: Am 1979 Number Installed to Date: 7,000 (See Vendor Proje Proje V-18) CANYO SUSINCES EVETEMS MICE SUSINCES EVETEM MICE SUSINCE SUSIN

SCIENTIFIC MICHO SYSTEMS, INC. DSX-80 Micro Word Length: 16-bit Operating System: IRMX 89; CP:M at. 85 Languages Supported: PLM Minimum Mamory: 128K bytes Maximum Memory: 2M bytes Mutingal Diseas: Yes. 8 Musimum On-Line Storage: 16M

Massimum On-Line Storage (16M bytes)
Massimum On-Line Storage (16M bytes)
Massimum I/O Purits 5 Communications Prostocils:
Communications Prostocils:
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Namber SCIENTIFIC DATA SYSTEMS, INC. SDS 400 SERIES

SOIL SCIENTIFIC MICRO SYSTEME, NIC., NIC.,

SCHENTIFIC MICRO SYSTEMS. INC. MCX-80

Micro Word Langth: 16-bit Governing System: PRAIX 85 CP/M Operating System: IRAX Bo of Bit Statement Memory 12th Dyles Maziman Memory 12th Dyles Maziman Memory 12th Dyles Maziman Memory 12th Dyles Maziman Co-Line Storage: 17M Dyles Maziman Co-Line Storage: 17M Dyles Maziman IO Peris: 1

		3	Micro
Communications Protocols:	Maximum Memory: 700K bytes Multiple Users: Yes Maximum On-Line Storage: 640K	Distribution: End user Vendor Sales Terms: Purchase Purchase Price: \$2.490 to \$3,500	SHOKE SIGNAL BROADCASTING CHEFTAN 9WHIT20
Overflowing OFM	Maximum Ond ion Stromer 6404	Vendor Sales Terms: Purchase	BROADCASTING
Dietribution: OEM Vendor Salos Torres. Purchaso Purchaes Price: \$3,900 to \$12,000		Maintenance: Beturn to	Supermorp
		manufacturing facility, Third-purry	Word Length: 15-bit
Maintenance: Return to manufacturing facility Date First Installed: January 1983 Manifer Installed to Date: 50	Asynchronous, Synchronous,	Purchase Price: \$2,490 to \$3,500 Maintenance: Return to manufacturing facility. Third purly Date First Installed: 1979 Member Installed to Date: \$0 —	Supermoro Word Langlik: 16-bit Operating Systems: CS/9 Languages Supposited: Cobot: Basic, Pascal, Forth Berinnen Memory: 64t Systes Maximum Memory: 14t Systes Matige Users: Yes, 10 Mestimen On-Line Storage, 10t.
Date First Installect January 1983	Beyndronous Destination OEM Vender Sales Terms: Purchase Purchase Price: \$2.005 to \$3,500.	Number Installed to Date: 50 —	Languages Supported: Cobol:
funitor installed to Date: 50	Vendor Sales Terms: Purchase	(See Vendor Profile Page V-19)	Minimum Mannery SAX (No.
190	Purchase Price: \$2,605 to \$3,500.		Maximum Moreory: 1M bytes
SEAL & COMPANY, INC.	Date First Installed: 1963	SIERRA NATIONAL CORP.	Multiple Users: Yes, 10
	SHARP ELECTRONICS CORP.	SIERRA 4000	
Word	PC1500	Word Levelly 524	Meanman (/O Parts: 2
Vene Langue 6-Cit	Hand hold 9	Word Length: S-SE Operating System: CPIM, LP NET, MP-M	Communications Protocols:
Nord Length: 6-bit Sealmure Memory: 64X bytes Authoric Liseds: No Searmure I/O Portic 32	Operation System System S.	MPM	Communications Protectis: Asynchronous Synchronous Destination: Their garry Purchase Price: \$11,200 Maintenance: Return to manufacturing facility, Third-party
	Languages Supported Dasic	Languages Supported: Cobol.	Durchase Price: \$11 300
Communications Protocols:	Measure Memory: 16K bytes	Minimum Marrowy Edit Parters	Maintenance Return to
Patribution: OFM	Maximum I/O Books 2	Maximum Memory: 64K bytes	manufacturing facility. Third-party
endor Sales Terms: Purchase	Nord Length: Soit Operating System: SHAIP S Languages Supported: Dasc Maziruan Memory: 160 bytes Matigie Users: No Maziruan 100 Busts; 2 Vender Sales Termis: Purchase Purchase Price: 5200 to \$400	Languages Supported: Cobol, Fortran Basin Pascar, C Billintuna Mannery; BKK bytes Maximum Memory; BKK bytes Maximum Memory; BKK bytes Multiple Users; No Maximum Cir-Line Sterage; 112M	
urchase Price: \$1,500 to \$2,500	Purchase Price: \$200 to \$400	bytes	SHOKE SHONAL GROADCASTING CHEFTAN 9W15720
Communications Protects: layor/bronus Braidburgers: CEM Frender Salies Terms: Purchase Auchase Price: \$1,500 to \$2,500 Balleteanops: On one Date Frest Installed: October 1978 Auchase Installed: October 1978 Size Vendor Pro	Maintenance: Return to	bytes Communications Protectals. Asynchronous, Synchronous, Reportronous, SOLC, SOLC/SHA, X 25, HOLC	CHEFTAIN PHIST20
harder investigat to Date: 150	Date First Installed 1997	Asynchronous, Synchronous,	Supermicro -
See Vendor Profile Page V-15)	Date First Installed: 1992 Number Installed: 1992 Number Installed: 1992 See Vendor Profile Page V-19)	IMPROVINGE SULC. SULC. SULC. SILC.	Opposition Sentem (1970)
SEATTLE COMPUTER	(See Vendor Profile Page V-15)	Distributions Freducer	Languages Supported: Cotor
MODUCTS	SISTHORP SYSTEMS, INC.	A 20, FOLC Distribution End user Vendor Sales Termy, Purchase Parchase Price: \$6.000 to \$18,000 Samesange: Return to manufacturing Endly, Third-purly Date First Installed; 1973 Manifert Installed; 1973 Manifert Installed; 1973	Chapter (Min 1981) 20 Superince (Min 1981) 20 Superinc
		Purchase Price: \$6,000 to \$18,000	Minimum Manney, 64K bytes
Acro ·	Micro	man fact one facility That was	Muturin Linear Yes, 10
Ford Longth: 16-bit	Word Longth: Stat	Date First Installed 1971	Maximum On-Line Storage: 15M
Accusing System: MS-COS	Mineram Manage 7 187 Indee	Number installed to Date: 100	
ortran, Basic, Pascel, C. Forth, Ada	Maximum Memory 1285 huten	500	Maximum I/O Porte: 2
Brimam Memory: 128K bytes	Multiple Users: No	SIERRA NATIONAL CORP.	Asynchronous Synchronous
toyo werd Length: 16-bit bereiting System: MS-DOS Anguings Supported: Cobox orizo: Sess: Places, C, Forth, Ade lesimon Memory: 12th Uyles Lesimon Memory: 1th bytes Letyte Users: No	Maximum I/O Ports: 6		Distribution: Third-party
	Assertences Sections	Micro	Vender Sales Terres: Purchase
ytes leatman I/O Ports: 4	Morry Word Langets 8-bit Languages 8-upported Blace Blackeaus Memorry: 1280 bytes Blackeaus Memorry: 1280 bytes Blackeaus Memorry: 1280 bytes Blackeaus Horrecy: 1280 bytes Perchase	SAFRIA SOOD Micro Ward Length; 8-bit Operating Systems CPM, MPM Languages Supported: Cotol: Portins, Basc, Pancal; CBM; Systems Season, SAK System	Communications Photocolic Asynchronous, Synchronous Distribution: Throppiny Vendor Sales Terris Purchase Purchase Price; \$11,100 Maintenance; Return to manufacturing facility, Third-party
	Vendor Sales Terms: Purchase	Operating System CPM MPM	menufacturing facility. Third-centy
SUPPLIANCE PROTOCOLOGY	Purchase Price: \$9,000 to \$15,000	Fortrer Been Pearel C	
etribution: Third-party	menufacturing facility	Minimum Momery: S4K bytes	BROADCASTING CHEFTAN SWISTING
endor Sales Terres: Purchase	Participant Installed 1579 Physics Installed to Date: 50 —	Maximum Memory: GUX bytes	CHIPFTAIN SWINTIN
ommunication Protects: synchronous intribution: Third-pany ender Sales Terms: Purchase withdrawn 2000 laintenance: On-site site Pirst Metalled: September Mo	Number Installed to Date: 50	Manipus Date: 166, 3	
ets First Idetailed: Sectorator	(See Vender Profile Page V-19)	Covies	Word Longth: 16-bit
		Communications Protection Communications Protection Adynchronous, Synchronous, Boynchronous, SDLC, SDLC/SNA, X 25 HDLC	Supernoro Wend Langth: 16-bit Operating System: CIS-9 Laringsings Supported: Cobox Balox, Praceal Meriman Moreney: SAC bytes Maximum Moreney: 1M bytes Maximum On-Line Sproage: 20M Maximum On-Line Sproage: 20M
amber Installed to Date: 100	SISTHORP SYSTEMS, INC.	Asynchronous, Synchronous,	Basic, Pascal
iee Vendor Profile Page V-18)	SPT-100 Moro	X 25 HOLD	Minimum Memory: S4K bytes
	Word Length: 5-bit	Distribution: End user .	Maximum Morney: 114 bytes
HAMELEON	Languages Supported: Basic /	Vender Sales Terms: Purchase	Marinana Ond the Stereon: 2004
CON CONTRACTOR OF THE PARTY OF	Minteness Memory: 126K bytes	Maintenance: Sic 990 to \$6,990	
ord Lenett: 876	Middlete Dearer No.	manufacturing facility Third-centy	Communications Protocols:
ord Length: 8/16 renating System: MS-DOS, CPIM I, CPIM 85	Merd Langth: 6-bit Languages Supported: Basic Minimum Memory: 128K bytes Maximum Memory: 128K bytes Multiple Users: No Messirvan I/O Perits 6	X 25 HOLD Destitution: End user Verder Sales Terms: Purchase Purchase Prices: 55 500 to \$6,990 Maintenance: Return to manufacturing facility. Third perly Dest Pinst installate: 1579 Howster installate: 1500— 600	Asynchronous, Synchronous Diserbudier: Theroparty Vendor Sades Terms: Purchase Purchase Price: \$12,500 Mantenance: Return to manufacturing lacity: Third-perty
CPIN 86		Number Installed to Date: 100 —	Vendor Sales Terres: Purchase
rytan Buser, Pascal menum Memory, 120K bytes menum Memory, 120K bytes admian Memory, 720K bytes diple Users: Yes astrone On-Line Storage: 320K	Asynchronous, Synchronous Distribution: OEM Vendor Sales Tarms, Purchase	-	Purchase Price: \$12,500
minum Memory: 126K bytes	Vendor Seles Terms: Purchase	BHOKE SHOMAL	married to the term to
extreme Mornory: 700K bytes is		SHOKE SHEMAL SROADCASTING CHEFTAN	
Alighe Users: Yes	Parchase Price: \$7,500 Date First Installed: 1979 Number Installed to Date: 50 —	CHEFTAM	SNOKE SIGNAL BROADCASTING CHEFTAN 9990
ies and an and and an	Marrier Installed to Date: 50	Supervice	SHOABCASTING
	100	Operation Strategy (1979	Supermon
ynchronous, Synchronous,		Languages Supported: Cotol.	Chair Table System Supermore Word Langeb, 16-bit Operating Systems OS-9 Languages Supermore Gasor, Face State Missenson Mannary 640 bytes Missenson Missensony 640 bytes Missenson Distance 10-bit Missenson Con-Line Sterreger 6604 Missenson Con-Line Sterreger 6604
professors CHM	SIERRA NATIONAL CORP. SIERRA 2000	HARC PROCES	Operating System OS/9
ndor Balas Yerres: Purchase	More	Maximum Manney 1M Parter	Same Pages Supported Cobol.
Tohase Price: \$1,955 to \$2,500	Word Length: 8-til:	Multiple Users: Yes, 10	Mineram Momery: 64K byon.
service CEM service Purchase index Beles Terres: Purchase index Price: \$1.955 to \$2,500 for First Installed: April 1903 se Vendor Profile Place V-18)	Operating System CP/M	Maximum I/O Parts: 2	Meximum Memory: 1M bytes
	Fortran Basic Presed C	Communications Protocols.	Multiple Uppers: Yes, 10
SEGUA COMPUTER CORP.	Minercen Moreory: 64K bytes	Distribution: Perd-conty	Index
AMELEON PLUS	Maximum Memory: 64K bytes	Vender Sales Torrac Purchase	Maximum I/O Ports: 2 Communications Protocols:
ord Langth: B/16-bit	SAEPHA 3000 Mont Length: 8-bit Operating System: CPIM Languages Supported Cobol, Languages Supported Cobol, Fortran, Saer-Pascal, Fortran, Saer-Pascal, Ratinum Sementy: GAC bytes Multiple Users: No Multiple Users: No Maritimum Sementy: GAL Maritimum Se	Purchase Price: \$3,000 to \$16,000	Communications Protection:
construct of the control of the cont	todas.	man death area feather Town	Asynchronous, Synchronous
CPIN 86	Dynes Communications Protocols:	CHEFTAN SECTION TO SEC	Communications Protocols: Asynchronous, Synchronous Distribution: Third-parry Vender Bales Terres: Purchase Purchase Price: \$11,800 Maintenance: Return to manufacturing facility. Third-parry
reguegae Supported: Cotol: rran, Sanc, Pascal renum Memory: 255K bytes	Asymptomous, Synchronous, Besynchronous, SDLC, SDLC/SNA, X.25, HOLC	Number Installed to Date: 500 —	Purchase Price: \$11,800
		1,000 (See Vendor Profile Page V-19)	

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SMOKE SIGNAL BROADCASTING	Word Length: 16-bit Operating System: CS/9	Supermore Word Langth: 16-bif	Supermicro Word Length: 16-bit
CHREFTAIN 9W60T200			
Supermicro Ward Langth: 16-bit	Basic Pascal Forth Minimum Memory: 64K bytes	Languages Supported Cobol. Basic Pascai Forth	Carguages Supported: Cobol.
Descritor Sestem OS/9	Maximum Memory: 1M bytes	Meimum Memory: 64K bytes	Moreow Marrage 648 faces
Operating System (05/9 Languages Supported Cobol, Basic Pascal Forth		Maximum Merpery: 1M bytes Multiple Users: Yes, 10	Maximum Memory 64K bytes Maximum Memory, 1M bytes Maximum 1O Perts 2
asic Pascal Forth	Maximum On-Line Storage: 5M	Maximum On-Line Storage: 16M	Maximum I/O Ports: 2
remain Memory: Bilk bytes utique Users: Yes, 10	Manimum I/O Poster 2	Maximum On-Line Storage: 16M bytes	Communications Proteceis: Asynchronous, Synchronous
	Communications Protocols:	Maximum I/O Poits: 2	
tes animum I/O Ports: 2	Asynchronous, Synchronous	Communications Protocols:	
nnumenton Protoccis:	Distributor: Third-party Vendor Sales Terms: Purchase	Asynchronous, Synchronous	Purchase Price: \$3 500 Maintenance: Return to
	Purchase Price: \$7 100	Distribution: Third-party Vendor Sales Terms: Purchase	paradecturing facety. Third-perhi
anbution: Third-party	Maintenance, Return to		
rchees Price: \$14,200 interience: Return to	manufacturing facility. Third-party	Maintenance: Return to manufacturing facility, Third-party	SMOKS SIGNAL BROADCASTING
nufacturing facility. Third-party	SWOKS SIGNAL	mancacturing lackly, medically	CHEFTAIN 8522
	BROADCASTING	SMOKS SIGHAL	
IOKS SIGHAL IOADCASTING	CHIEFTAIN SSYW15	BROADCASTING CHIPPTAIN STWM	Word Langth: 16-bit Minimum Memory: 56K bytes Maximum Memory: 1M bytes
EFTAIN 90	Supervioro	Supermicro	Maximum Memory: SM today
METHOD	Word Length: 16-bit Operating System: OS/9		
ed Langillo 16-bit		Operating System: Ot/S Languages Supported: Cobol. - Basic, Pancel Forth	
ecating System: OS/9		Languages supported Cobol.	Asynchronous, Synchronous Purchase Pricer, \$3,900
ngueges Supported Cobot	Minimum Memory: 64K bytes Measure Memory: 1M bytes		
numum Memory: GEX Bytes sumum Memory: 1M bytes			SMOKS SIGNAL
samors Memory: 1M bytes		Multiple Users: Yes Meximum On-Line Starage: 31M	BROADCASTING CHEFTAN 9524
uttiple Users: Yes, 10 seitnum I/O Ports: 2	Maximum NO Ports: 2	hates	
	Communications Protection:	Maximum I/O Ports: 2	Operating System: OS/9 Languages Supported: Cobst. Basic, Percer
ynchronous, Synchronous Arribution: End user		Communications Protocols: Asynchronous Synchronous	Languages Supported: Cobol.
Inbution: End user leter Sales Terms: Purchase	Distribution: Third-party Vendor Sales Terms: Purchase	Distribution: Thyrt-party	Minimum Mamory SAX Index
rchape Price: \$2 200 Ancenance: Return to	Purchase Price: \$6 500	Dishibution: Third-party Vendor Sales Terms: Purchase Purchase Price: \$11,400 Maintenance: Return to	Minimum Memory: 64K bytes Meximum Memory: 1M bytes
Programme Return to	Mantenance: Return to	Purchase Price: \$11,400	Mutiple Users: Yes: 10 - Maximum On-Line Storage: 1 St
nulacturing facility. Third-party	manufacturing facility. Third-party	menutacturing facility. Third-party	- Measure On-Line Storage: 1 00
IOKS SIGNAL	SMOKS SIGNAL		Maximum I/O Perte: 2
DADCASTING	BROADCASTING	BROADCASTING	Asynchronous: Synchronous
SFTAIN BEWIS	CHEFTAIN SSYW15T20	CHIEFTAN MIWIG	Neynorronous Synorronous
DESTRUCTO	Supermore		Distribution: End user Vendor Salos Torres: Purchase Parchase Price: \$4,300
erating Septem CS/9	Word Langth: 16-bit Operating System: OS/9	Word Longth: 16-bit Operating System: OS/9	Purchase Price: \$4,300
permicro and Langels 16-bit arcting Systems OS/9 reguages Supported: Cobol as: Pascel Forth		Languages Supported: Cotol	Maintenance: Return to manufacturing facility. Third-parts
sc Pascel Forth Migle Users: Yes, 10	Basic, Pascal Minimura Memory: 64K bytes		
raimum On-Line Storage: 16M	Maximum Memory: 1M bytes	Minimum Memory: 64K bytes Meximum Memory: 1M bytes	SMOKE SIGNAL
	Maximum On-Line Storage: 16M	Meximum Memory: 1M bytes Multiple Upers: Yes: 10	CHEETAN MAIS
simum I/O Ports: 2 menunications Protocols:	Maximum On-Line Storage: 16M		
ynchronous, Synchronous	Maximum I/O Posts: 2	bytes Manimum I/O Ports: 2 Communications Profession	Word Length: 16-bit Operating System: OS/9 Languages Bupperted: Cittol: Basic: Pascal, Forth
ynchronous, Synchronous stribution: Third-party inder Sales Terms: Purchase	Communications Protocols	Meximum I/O Ports: 2 Communications Protection	Leonages Supported Citted
ender Seles Yerms: Purchase enhase Price: \$8,200		Asynchronous Synchronous	Basic, Pascal, Forth
eintenence: Return to	Vendor Sales Terres: Purchase		Minimum Memory: 64K bytes Maximum Memory: 1M bytes
anufacturing facility. Third-party	Purchase Priory \$11,700	Vendor Sales Terme: Purchase Purchase Price: \$3,200	Multiple Users: Yes: 10
	Maletenance: Return to	Maintenance: Return to manufacturing facility: Third-party	
MOKE SIGNAL MOADCASTING	manufacturing facility, Third-party	manufacturing facility: Third-party	Asynchronous, Synchronous
REFTAN 95W 15T20	SMOKE SIGNAL	SMOKE SIGNAL	Communications Protocols: Asynchronous, Synchronous Destination: Thrd-party Vendor Sales Terms: Purchase
	BROADCAETING		
end Longth: 16-be	CHIEFTAIN 98W15 .	CHEFTAIN NEWNOTED	Maintenance: Return to manufacturing facility: Third-party
ed Longth: 16-be erating System: OS:9 rguages Busported Cotol.	Word Length: 16-bit	Supermero	manufacturing facility: ffwo-party
	Operating System: QS/9	Operation System: OS/9	SMOKS SIGNAL
nimum Memory: 64K bytes	Operating System: CS/9 Languages Supported: Cotol: Basic, Pascal Forth	Languages Supported: Cotol.	
nimum Memory: 64K bytos asimum Memory: 154 bytos utiple Users: Yes, 10	Base, Pascal Forth	Supervision Weel Length: 16 bit Operating System: OS/9 Lengungers Supported: Cobol, Barsic Pascal, Form Stellerum Memory: 64K bytes Masterum Memory: 16K bytes Masterum Memory: 10K bytes Matthigue Users: 19th 10 Masterum O'r-Line Sterage: 61M	CHIEFTAIN 9823 Supermicro
	Minimum Memory: 64K bytes Maximum Memory: 1M bytes	Maximum Memory: 1M bytes	Word Langth: 15-bit
tes salmum I/O Ports: 2		Multiple Users: Yes. 10	Operating System: OS/9
esimum I/O Ports: 2 emmunications Protocols:	Maximum I/O Ports: 2	Maximum On-Line Storage: 61M	Languages Supported: Cotot Fe
evictronous Synchronous	Communications Protocols: Asynchronous Synchronous	Maximum (ID Ports: 2	Supermicro Ward Langth: 15-bit Operating System: CIS-9 Languages Supported: Cobot: Fi Releases Memory: 1M Dyles Maximum Memory: 1M Dyles Maximum Memory: 1M Dyles Multiple Users: Ves. 10 Maximum 1/0 Protis: 2 Communications Protection
	Distribution: End user Yender Sales Terms: Purchase		Multiple Users: Yes, 10 .
ender Seles Terres: Purchase		Synchronous	Maximum I/O Ports: 2
herbana Pricer \$11 500			

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See Vendor Prote Page v.179
SPECTRA SYSTEMES, SEC.
SPECTRA SEE
More Langer, 876-09
More Langer, 876-09
Languages Superior Cook,
Forton, Reac, Palca, P.J., C.
Brierines Manney, 1396 (type,
Marking Chart, V. C. Se, Vyse,
Marking Chart, V. C. Se, Vyse

8 YETEMS GROUP 2014 More West Langth: Soil Operating System; CPML OASS.

Longth: B-bit ling System: MPAL CPAL

SYSTEMS GRO-2950 More Leagn: Sot Word Leagn: Sot Secretary Systems CIPM: OASIS, Secretary Systems CIPM: OASIS,

A pusper Supported: Cotol. an, Bess: Pascer mum Mernery; 64K bytes mum Mernery; 64K bytes ple Users. No.

ength: 8-bit leg System: CPM, CASIS.

Communications Protocols: Asynchronous, Synchronous Distribution: Third-party Vendor Salies Terms: Purchase Purchase Price: \$12,650 to \$15,000 Date First Installed: Documber 1962 Number Installed to Describe: 50 2000
Mord Length: 8-bit
Operating System. CPTM OASIS,
MPTM, DUSNESS EXPTESS
Lenguages Expoperiset Cotot;
Fortrari Base:
Minimum Memory: 128K bytes
Maustum Memory: 127K bytes
Maustum Memory: 127K bytes
Mattiglie Dance: Ves. 20
Massinum On-Live Sterage: 1 1M Under Per Sessione C. Delete 50

TOTAL TOTAL C. Delete 50

TOTAL C Resistom On-Line Storage: 1 The yield desirence IrO Porte: 20 Communications Protecols: Synchronous. Synchronous. Synchronous. Sentimation: Third porty render Sales Termini Purchase Prochese Price: 85,279 to 511 000 Oter First Installed: November 1992 Marrier Installed is Date: 100 —

ST actions with the control of the c

astream Co-Line Storage: 1 TM 69 astream I/O Points 20 astream I/O Points 20 sprachronous: Synchronous: synchronous: Synchronous: synchronous: Synchronous: artification: Third-party artification: Third-party artification: 38 660 to \$12,000 isis First Installed: Neurobor 1962 artification for Date: 20 million Installed: Neurobor 1962

ord will Length: 8-bit will Leng Bashbarn Un-Leve serve yield Assessme NO Perits: 20 Communications Protecols: Hypothorous: Systemous Systemous Functions Assessment Server Functions Functions Price: 110,345 to \$15,000 Date Print Installed in November 1950 —

e Longth Bist
wiling System: CPAN, CASIS,
it BUSINESS EXPRESS
usages Supported: Cobo;
or, Busic Basic in Memory: 128K bytes in Memory: 512K bytes i Users: Yes, 20 im On-Line Storage: 3 2M

Communications Protocola: Asynchronous: Baynchronous: 3740 Vender Sales Terrise: Purchase. Ramal, Leose Purchase Price: \$7,785 Manntenance: On sire, Return to manufacturing lacity. Third-party

TABLE PRODUCTS CO.

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to Price Inside Varior 1923
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(Gen Vendor Fruite Page V-20)
YAR AUTONIATION, INC.
TACK AUTONIATION Date First Installect Morch 1903

YAS PRODUCTS CO.
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Werd Length Stot
Operating System CPML MPI/M
Lenguages Supported Cook,
Forters Sees, Proces, C.
Forters Sees, Proces, C.
Forters Sees, Proces, C.
Forters Sees, Proces, C.
Martine Users, No.

Measurum On-Line Storage: 10M bytes
Meastram I/CD Pertix: 3
Communications Protocols:
Asynchronous, Baynchronous
Vender Sales Terms: Purchase.
Rentis; Liesas
Purchase Prince \$7,500
Meantenance: On-six, Return to:
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Cole Vandor Prottle Page V-20)
YAS PRODUCTS CO.
1930
Clesking
Clesking
West Langth: 16-bit
Clesking System: CPAL MPTM
Languages Supported Colou.
Fortiers State: Prottiers Colours
Maritime State: Colours
Maritime State: Colours
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TAMOY CORP.
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Date First Installed January 198
TAMENT CORP.
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			MICI
Distribution: Third-purty Vendor Sales Terms: Punchase.	Minimum Memory: 64K bytes	manufacturing facility	Maximum I/O Porto: 4
	Minimum Memory: 64K bytes Maximum Memory: 128K bytes Multiple Users: Yes, 18	manufacturing facility Date First Installed: 1979 (See Vendor Profile Page V-20)	Maximum I/O Ports: 4 Communications Protocols: Asynchronous
Purchase Price: \$4,992 to \$11,190 Maintenance: On-siz: Return to	Meximum On-Line Storage: 300M	TECMAR, INC.	Asynchronous Distribution: OEM, Thyroporty Yender Sales Terms: Purches Purchase Price: \$7,645 Maintenance: Return to
Turnifacturing facility Average Maintenance Fee: \$20 Date First lestalled: 1982	Meximum I/O Perts: 18		Purchase Price: \$7,645
Average Maintenance Fee: \$80 Date First Installed: 1567	Communications Protects: Asynchronous Bisynchronous	More	Maintenance: Return to manufacturing facility Date First Installed: 1979
	Chatribution: Thrd-party Vender Sales Terms: Purchase,	Word Length: 15-bit Operating Systems CP:M 86; MP/M 86, MS-DOS	Date First leaseline: 1979
TANO CORP.	Vender Sales Terres: Purchase, Lease	BG, MS-DOS	
		Lampungers Supported: Cobol. Fortran, Basic, Pascal, Forms 2 Steinbrann Marrancy SIZK bytes Maximum Marrancy: 1M bytes Maximum Mersery: 1M bytes Maximum On-Line Storage: 23 4M	TECMAR, INC.
Word Lengthy 8-bxl Linguages Supported: Besic Marinum Mercey; 64% bytes Marinum Mercey: 256% bytes Autiple Users: No Maximum On-Line Storage: 320%	Maintenance: On-site Average Maintenance Fee: \$185 Date First installed: December 1979	Medicare Memory: 512K bytes	TEC W Moro Wand Length: 8-bit Operating System: CP/M 80 Languages Supported: Fortra Basis, Pescal. C Manareum Mereory: 64K bytes Maximum Mereory: 64K bytes Maximum Device: No Maximum Dov-Line Storage: 1
Britram Memory: 64K bytos	Date First installed December 1979 Humber Installed to Date: 100 —	Multiple Upers, Yes: 4	Operating Septem CPM 80
Authors Users No		Maximum On-Line Storage: 33 414	Languages Supported: Fortra
Saximum On-Line Storage: 320K	(See Vendor Profile Page V-20)	bytes Moximum UD Paris: 7	Minimum Memory: 64K bytes
Septiment I/O Ports: 4	TECHNICO, INC.	Communications Protocols:	Maximum Memory: 64K bytes
errunications Protocols:	TMF-16	Commencations Protocols: Aspectronicus Disastication: CEA, Therd-party Yender Sales, Terms: Purchase Purchase Price; \$7.565 Maintenance; Petum to manufactumg facility Date First Installed: 1975	Maximum On-Line Storage: 1
istribution: End uter	Morti Werd Lungth: 16-bit Operating System: MOS Languages Bargeartest: Fortran, Basic, Pascal, C Minimum Mescarg: 640't bytes Machinam Mescarg: 160't bytes Machinam Mescarg: 160't bytes Multiple Userst: Yes, 18 Master Ge-Line Sterage: 161d International Confessions (161d	Vender Sales Terres: Purchase	Maximum I/O Ports: 4
synchronous isselbution: End uter lender Sales Terms: Purchase	Operating System: MOS	Meintenance: Return to	
verhese Price: \$15.000 lemensore: On ste. Hillam to	Basc, Pascal, C	Date First installed 1979	Asynchronous Distribution: OEM, Third-party Yender Sales Terms: Purchase Punchase Price: \$7,645
enviacturing facility	Minimum Moreory: 64K bytes		Vender Sales Terres: Purchas
on-viacturing facility ate First installed: 1877 tember installed to Date: 100 —	Maximum Momory: 192% bytes Multiple Union: Yes: 16	TECMAR, INC.	Purchase Price: \$7,645
00 See Vendor Profile Page V-20)	Maximum On-Line Storage: 18M		Momenture: Return to manufacturing facility Date First Installed: 1979
	bytes Massivure I/O Ports: 18 Communications Protocols:	Word Langth: 18-bit Operating System: CP/M 86, MP/M 86, MS-DOS	Date First installed: 1979
ARRELL ELECTRONICS MPIRE I	Communications Protocols	66. MS-DOS	TEXTRONIX, INC.
márco		Languages Supported Cotol	4051 Desktop
eshing Ferei Length: E-bit persiling System: CP-M persiling System: CP-M persiling System: CP-M persiling System: APK bytes instrument Millerony: 256K bytes instrument Millerony: 256K bytes instrument On-Line Storage: 4064 destroams On-Line Storage: 4064	Distribution: OFM Vandor Sales Torres: Purchase.	50. NO-LUC Languages Supported: Cobot Fortun, Basc. Pascal C, Forms 2 Maximum Memory: 13/2 bytes Meximum Memory: 13/ bytes Maximum Memory: 13/ bytes Maximum On-Line Storage: 33 4M	Specific Application: Data And
mounted Statement of PL/L C.	Portal Lease Durchase Direc 54 300 to 50 505	Meximum Memory: 114 bytes *	Word Length: 8-bit
inc. D-Basic	Maintenance: On-site	Maximum On-Line Storage: 33 4M	Minimum Mamory: 16K bytes
extract Moreony, 4ct, bytes	Date First leadednet (270	System Maximum I/O Porte: 7 Communications Production	Maximum Memory: 32% bytes
diple Users: Yes. 4	Rental, Lease Purchase Prior: \$4,360 to \$9,595 Meintervance: On-dis Avienge Meintenance Fee: \$60 Dote First Installed: \$279 Member Installed to Date: \$00	Communications Protectis:	Deskoop Specific Application: Data Are Word Langth: 8-bit Languages Spaperted: Basic Minimum Mannayr 16K bytes Maximum Mannayr 15K bytes Maximum LO Peytes 2 Communications Physiocols:
solmum On-Line Storage: 4066		Communications Profescols: Asynchronous Describeton: OEA, Third-party Yendor Sales Terrise. Purchaser Purchase Prices \$12,950 Maintenancer Return to manufacturing Society Date First Installand; 1979	Communications Protocols:
interest to-Live Service 404 feb services in O Ports. 6 interest in O Ports. 6 interest in O Ports. 6 interest	TECHNICO, INC.	Vender Sales Terms, Purchase	Asynchronous Distribution: End user Vender Sales Terms: Purchas
stribution: Theo-party	Morol Word Langth: 16-bit Operating System: SCS Languages Stagescred: Foreign Stack, Paccal, C Minima Manager, SCH, Option Machinate Manager, 164K, Option Machinate Manager, 164K, Option Machinate Manager, 164K Machinate Operating Storager: 154	Purchase Price: \$12,990	
enthese Price: \$4,061 to \$6,730 ·	Operating System SCS	manufacturing facility .	Purchase Price: \$6.295 to \$6. Maintenance: On-ote, Return I manufacturing facility Date Fivel Installed December Number Installed to Date: 10 to 50.000
profession leader The Leader	Languages Supported Fortien,	Date First installed: 1979	Maintenance: On-ode Return t
de First installed: 1980	Minimum Momory: 32K bytes	TECMAR, INC.	Date First Installed December
of the second of	Maximum Morrory: 64K bytes	TEC BOW	Munitier Installed In Date: 10 0
de Vendor Profile Page V-20)	Meximum On-Line Storage: 1M	Word Longth: 18-bit	(See Vendor Profile Page V-20)
ARRELL ELECTRONICS		Word Langth: 18-bit Operating Systems: CP/NJ 85, MP/NJ 86, MS-DOS	
affine 6	Meximum I/O Ports: 1 Communications Protocols:	Languages Bupperted: Cotol.	TEXTRONIX, NG. 4052A
and Langet: 8-ce	Distribution OFM	Fortrart Basic, Pascal C, Forms 2	Desktop
secuting Systems CPIM	Vendor Sales Terms: Purchase.	Lengueges Busperted: Cobol. Forrer, Bessi, Petcal C. Forres 2 Minimum Memory: 25K bytes Masterum Memory: 1M bytes Masterum Memory: 1M bytes Mustiple Users: No Mustiple Users: No Mustiple Users: No Mustiple Users: No	Larguages Supported Basic
ion 5	Purchase Prior \$700 to \$5.500	Maniness Co.d inc Streets 27 444	Minimum Memory: 32% bytes
nimum Memory: 48K bytes	Maximum I/O Paris: 1 Communications Produces: Asynchronous Sentraliser OEM Vender OEM Vender Sales Terms: Purchase Purchase Prices 1700 to 50,500 Maintenance On-site Avenage Maintenance Price: \$40 Date First Installed: 1577 Maintenance Installed: 1507 Maintenance 1500 March		Word Longth: 18-bit Languages Supported Basic Minimum Mannery: 20% bytes Maximum Monnery: 64% bytes Maximum Monnery: 64% bytes Maximum No Partix: 12
Highe Users: Yes, 4	Date First installed: 1977	Maximum I/O Perts: 5	Meximum 1/0 Ports: 12 Communications Protocols:
certain a central control of the formation of the control of the incompany the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the control of the co	Number Installed to Date: 2,000	Asynchronous	
ries eximum I/O Paris; 8	TROMAN MIC.	Communication Proposes Asynchronous Distribution: CELL, Third-party Vander Sales Termic Purchase Purchase Prior: \$10,900 Maintenance: Refum to mentacuring tacility Date Perst Insention: 1979	Manufact Sales Towns Durchase
etribution: Third-party		Purchase Prior: \$10,990	Rental
intenance: Return to	Word I meetly 1840	Meintenance: Return to	Purchase Price: \$9,900 to \$14.
erutacturing facility, Third-party	Mord Langth: 18-bit Operating System; CPIM 86, MPIM 86, MS-DOS	Date First installed: 1979	menufacturing facility
mission und Peris: 8 attitudios: Thrd-party unchase Press: \$5,233 to \$8,929 attitudios: Rejum to attitudiose Rejum to archachung tacity, Third-party site Pirel Investigat: 1600 — uniter Installed to Date: 100 —	Languages Supported Codes	THOMAS, INC.	Parties Purchase Price: \$1,900 to \$14, Maintenance: On-site Return to manufacturing facility Date First Installed; July 1979 Mamber installed in Date: 500 1,000
	Fortran, Basic, Pascal, G. Forms 2		1,000
M. MG.	38, MS-DOS Lampagen Supported: Cobol, Fortran, Baloic, Pascat; G., Forms 2 Minimum Memory: 14K bytes Mazimum Memory: 15 bytes Mazimum Memory: 15 bytes Mazimum Memory: 15 Mazimum 10 Pertix: 5 Communications Protocole:	TECLAS I Moro Weed Length: 8-bit Operating Systems (CP,0) 80 Languages Essperated: Fortex- basic Pascot: GMC types Macamen Manager GMC types Macamen Remarks (GMC types Macamen Remarks	
HAM	Multiple Users: No	Operating System: CP.N 80	TEXTRONIX, INC.
red Langetic 8-bit	Communications Protection	Congregoe Supported Fortran.	Desktop
Siss, 1960. Ered too and Langel: 8-bit sensing System: CPIM, TURBO 26	Asynchronous Distribution: OEM, Third-purty Vacador Sales Terms: Purchase Purchase Prior: 54,300 Maintenance: Return to	Minimum Memory: 64K bytes	Languages Supported: Bass:
Inguages Supported: Cobol.	Venter Sales Terms Purchase	Maximum Momeny: 64K bytes McConta Charge: No.	Meanure Manage 32K bytes
orison, Basic, Basic plus, Basic plus Pascal, RPG, APL, PL/1, Const. C:	Purchase Price: \$4,360	Meximum On-Line Storage: 2-4M	Multiple Users: No
Pancel, RPG. APL. PL/1, Const. C;	Maintenance: Return to	bytes .	4054A Desktop Word Langtic 8-bit Languages Bupperted: Basc Medinan Memory: 3DK bytes Massimum Memory: 3DK bytes Multiple Useric No Massimum I/O Partiz: 12

Communications Protocols: Asynchronous Deshibution: End user Vendor Sales Terros: Purchase, tal shase Price: \$14,950 to \$18,450 ntenance: On-sin, Return to sufacturing facility a First festalled: July 1979 Date First Installed: July 1979
TENTRONEX, SNC.
4112A
Moro
Specific Application: CADICAM
Word Length: 16-or
Operating Systems: CPM 56
Languages Supported: Fortian.

Assembler Minimum Memory: 32K bytes Maximum Memory: 512K bytes Multiple Users: No Maximum On-Line Storage: 1M

Indication to Color Springs 1 M bytes Maximum I/O Ports: 4 Maximum I/O Ports: 4 Communications Protocols: Asynchronous Postituenes: End uner Purchase Proce: 55 500 to 513,300 Maintenance: On-site, Return to manufacturing facility. Polis First Installed: May 1961

Date First Installed: May 1961
TEXTRONEX, INC.
4112A
4112A
4112A
5pecific Application: CAC/CAM
Word Length: 16-or
Operating Systems: CPIN 86
Languages Supported: Basic
Bharinans Memory: 2005 bytes
Martinet Memory: 8005 bytes
Martinet December 100
Martinet Memory: 8005
Martinet Memory Multiple Users: No. Makemen O-Line Storage: 1M bytos Makemen IVO Ports: 4 Cemmaniestens Protocols: Approximate Storage: 1M bytos Makemen IVO Ports: 4 Cemmaniestens Protocols: Approximate Storage: 1M bytosis Sales Terms: Purchase Purchase Protocols: 60 to 302,700 Maintenance Chrysic Ratum to manufacturing facility Design Ratum to Maintenance Chrysic Ratum to Maintenance Chrysic Ratum to Maintenance Chrysic Ratum to Maintenance Chrysic Ratum to Maintenance Chrysics Ratum to Maintenance Chrysics Ratum to Maintenance Chrysics Ratum to Maintenance Chrysics Ratum to Maintenance Ratum to Maintenance Ratum to Ratum

TEXTRONIX, INC. Moro Specific Application: CAD CAM Ipacitic Approximation of Craphics Approximation of Manual Research (Inc.) And the Committee of imple musicalians Protection inchronous relations. End user relations: End user relations: End user fluridate phase Prince \$17,000 to \$25,100 intercervoir: On-site a First Installed: May 1981

Multiple Users No. I Masteware On-Live Storage 12M bytes I Masteware I/O Portic 4 Communications Protocols Asynchronous, Synchronous Destibution: Timed purity Version Sales I Framis Purchase. Proc. 32,735 Mustelanean, Exercis Corp (See Vandor Proble Page IV-20) (See Vandor Proble Page IV-20)

Maximum On-Line Storage: 40M bytes Communications Prosocia: Asynchronous Destribution: End user Vendor Sales Terme: Purchase Purchase Price: \$12,000 Maximum Sect. Plant 10 rearufacturing facility. Third-party (Sine Vendor Photile Page 1-25) (See Vendor Proble Page V-20)
TELCON INDUSTRIES, INC.
NORS 9
Portable
Word Length; 5-bit
Operating System: ChM
Lenguages Supported: Cobol,
Ford In. Basic, Placed
Berlinson Memory; 54K bytes
Multiple Users; No
Massement On-Line Storage; 12M
Assement On-Line Storage; 12M

Maximum Circuits deblogs: 10 bytes
Maximum I/O Ports: 4
Communications Protecols:
Asynchronous Synchronous
Deblossine: Thrif-party
Yender Sales Terres: Purchase

or chasePrice: \$2.395 stenance: On-site, Xerox Corp.

Mantenance Choice, Xero Copy TELLOON HOUSETWEE, NC. 100413, NC. 1004139, NC. 100413 TEL-100
Specific Application: Pricing Vision/Conf.
Specific Application: Pricing Vision/Conf.
Vision/Conf. Conf.
Vision/Conf.
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manufacturing lassin; Timelyperty PELSPILE CORENTYER PRODUCTS, MIC. TELPPIC More Specific Applications Communications Word Length 22 offset Forest Blokens Memory; 195 (bytes Massimum On-Line Blokense 4 65 (bytes Communications Productions Communications Productions Partners Proc. 52 (40)

TOTAL COMMISSION FREE, INC.
TOTAL COMMISSION FREE
Manages Reproduct Code,
Fortists Resc. Parcet. Commission Free
Manages Reproduct Code,
Manages Proc. 11 (50)
Partners Proc. 11 (50)
Reproduct Code,
Manages Reproduct
New York Code,
Manages Reproduct

TELERAM COMMUNICATIONS CORP. TELERAM 3000/1

TELECTRONIC, 1906.
SIAM
Micro
Wood Length 8-bit
Operating Systems CP IM
Languages Supported Cobol.
Fortran, Bass, Pascal, C
Microwan Memory, 6MK System
Maumum Memory, 6MK System
Memor Maximum On-Line Stronger: 10M bytes.
Communications Protocole:
Asynchronous
Distribution: End user
Vendor Sales Terms: Purchase
Purchase Prices 22 500 to \$15,000
Mestipeancer Record to annual current to manufacturing staffy. Third-party

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Date Frest Instituted Journaly 1963
TELLEVIORE STATEMEN, INC.
TELLETORE INC.
MODI Laughts 5-00 (Note of the Control of the Con

(See Visider Profit Page V-21)
TESCYUPOD SYNTEMS, 1860,
TESCH STEELS, 1860,
TESCH STEE

			Micros
4			
Operating Systems CPIM 2.2 Languages Supported: Cotol. Fortran, Basic, Pascal, APL, PL/1, C.	TELEVIDEO SYSTEMS, INC. TS 1600 Departs	TEXAS INSTRUMENTS, INC. TI PROFESSIONAL	Average Maintenance Fee: \$25 Date First Installed: Juruary 1963 Humber Installed to Date: 50 —
Alone Forth	Wood Leastly 16 ha	Personal Months of the	100
Minimum Memory: 64K tytes	Operation Sestion: CPM 66 - *	Word Langth: 16-bit Operating System: UCSD-P; CPIM 56 MS-DOS; MPM 86	100
Algot Forth Minimum Memory: 64K bytes Maximum Memory: 64K bytes Maximum Memory: 64K bytes Multiple Users: No	Word Length: 16-bit Operating System: CPIM 66 - Languages Supported: Cobol: Fortran Base: Pascal: APL, PL/1, C: Contr. Marc.	SE MS-DOS, MPM BE	3 R COMPUTERS, INC. AYATAR TC100
Maximum On-Line Storage: 1M	Fortran Basic Pascal, APL, PL/1, C: Forth Algol	Languages Supported Cobol	AVATAR TC100
bytes	Minimum Manness 1987 house	Canguages Supported: Cobol Fortian Sanc Pascal C Minimum Hernary: 64K bytes Maximum Memory: 256K bytes Multiple Users: No	Moro
	Minimum Memory: 128K bytes Maximum Memory: 256K bytes Multiple Users: No Distribution: OEM Vendor Sales Terms: Purchase	Meximum Memory 2566 bytes	Word Langth: 8/18-br Operating System: CPM: CPM 86. MS-DOS
Communications Protocels:	Multiple Users: No	Multiple Users: No	MS-DOS
Communications Protocols: Asynchronous, SDLC Destitution: CEM Vendore Sales Terms: Purchise Purchase Price: \$3,405 Maintenance: On-one Date First testalled: 1901 Mamber Installed to Date: 50 —	Distribution OEM	Maximum On-Line Storage: 106/ byles	Languages Supported: Basic: Assembler
Vendor Sales Terms: Purchase	Maintenance: On-see		Minmum Memory 120% butter
Purchase Price: \$3,495			Measure Memory: 2565 butes
Date Service On-Sec	TELEVIDEO SYSTEMS, INC.	Distribution: Third-purty Vendor Sales Terms: Purchase Fuschase Price: \$2.556 to \$7,000 Maintenance: On ote Date First Installed: 1983	Missense Memory: 129K bytes Masenum Memory: 255K bytes Multiple Users: No Mesterum On-Line Stempe: 1 6M
Marcher Installed to Date: 50 -	TS1603H	Surchase Street 52 556 to 57 500	Massimum On-Line Storage: 1 6M bytes Massimum IrO Parks: 3 Disarbotise: CCM Vendes Sales Terrer: Purchase Partities Price: 52,153 to 53,465 Maintenance: Return to nanufacturing facility Aversee Maintenance Pres: 500
100	Personal Word Lanoth: 15-bit	Maintenance On site	Maximum I/O Poster 3
	Operating System: MS-DOS, CP/M	Date First Installed: 1983	Distribution: OEM
TELEVIDEO SYSTEMS, INC. TS802H	86		Vendor Sales Terms: Purchase
	Languages Supported: Cobol.	THOUGHTWORKS, INC.	Purchase Price: \$2,195 to \$3,495
Word Langth: 6-bt	Moreon Manage 1997 between	TW-800 More	ruo facturo tació
Operating System: CP:tu 2.2	Maximum Moreover 255K Index	Word I marth: Gibt	Average Maintenance Fee: \$20
Word Length: 6-bit Operating System: CP/M 2.2 Lertguages Supported: Cotol Fortran; Basic, Pascal, APL, PL/1; C.	Languages Supported: Cobo, Fortran: Sesic Minimum Memory: 125K bytes Maximum Memory: 255K bytes Maximum On-Line Storage: 254	Word Length: 6-bit Operating System: TURBO DOS. CPM	manufacturing facility Average Maintenance Fee: \$20 Date First Installed: April 1983 Mainter Installed to Date: Less Fron
Mani Folith	bytas	CPM	Humber Installed to Date: Less From
Minimum Memory: 64K bytes	Vander Sales Tormer In return	Languages Supported Cocol.	
Maximum Memory: 64K bytes	bytes Distribution: Third-party Vendor Sales Terms: Purchase Purchase Price: \$4.455	Languages Supported: Cobol, Fortran, Basic, Pascal Minuseum Memory: 64K bytes	3 R COMPUTERS, INC. AVATAR TC110
Agol. Forth Minimum Merney: 64K bytes Maximum Merney: 64K bytes Multiple Users: No Maximum On-Line Storage: 10M		Multiple Upors: No Maximum On-Line Storage: 600M	Morn
bytes	Date First iretalest: 1983	Maximum On-Line Storage: 600M	Word Leasth, \$150 hrs
System (O Portig 3	TESOATA, MC.	bytes Destribution: End user Vendor Sales Terms: Purchose Purchase Price: 55 275 to \$20,000 Manthesance: On the Setum to	Word Length: 8/16-bit Operating System: CPIM, CPIM 86. MS-DOS
Communications Protocols: Asynchronous, SDLC	SMART	Yender Sales Terms: Purchase	MS-COS
Aspirorous, succ		Purchase Price: \$5 275 to \$20,000	Languages Supported: Busic.
Distribution: OEM Vender Sales Terms: Purchase Purchase Price: \$5.505	Specific Application: Network Management	Mentenance: On-site, Return to	Mariness Manager 1769 Indian
Purchase Price: \$6.995	Management	Assesse Maintenance Day \$100	Languages Supported: Bunc: Assertour Birinaum Blomony: 126K bytes Blasimum Mornony: 256K bytes Blasimum Mornony: 256K bytes Blasimum On-Live Storage: 21M
Maintenance: On-site Date, First Instaded: December 1961	Operation Sustain CTOS	Date First Installed: 1983	Multiple Users: No
	Weed Length: 18-bit Operating System: CTOS Languages Supported: Cotot, Fortran, Basic, Pascal Minimum Nomer; 512K bytes	roandacturing facility Average Maintenance Fee: \$100 Date First Installed: 1563 (See Vendor Phote Page V-21)	Masurum On-Line Storage: 21M
TELEVIDEO SYSTEMS, INC.	Fortran, Basic, Pascal		Maximum I/O Boster 4
78403	Manufacture Monterly: 512% Dynes	3 R COMPUTERS, INC. AVATAR TC1	Distribution: OEM
Wood Langeth, S. tot	Multiple Uners: Yes.	Opposition	Vendor Sales Teress: Purchase
Descrip Word Langth: 8-bit Operating Bystem: CP:M 2.2 Languages Supported: Cotoc: Fortran Basic, Pascal, PL/1: C;	Maximum Memory: 512K bytes Maximum Memory: 512K bytes Mulliple Users: Yes Maximum On-Line Storage: 80M	Word Longth: 8-bit	Maintenance (Total In 10 30,200)
Languages Supported: Cotot:		Operating System: CP.M	menufacturing facility
Fortran, Basic, Pascat PL/1; C;	Boundaries SOLOSMA Y 25	Longueges Supported: Basic	Average Maintenance Fee: \$25
Agol, Forth Minimum Memory: 54K bytes Maximum Memory: 128K bytes Maximum Memory: 128K bytes Maximum On-Line Storage: 1M	Communications Protection Bisynchronous, SOLCISNA, X 25: 275/15/16/16 Distribution: End user Vender Sales Terms: Purchase	AVATAR TCT Desiring Word Length: 8-bit Operating Bysteine: CP-M Languages Supported: Basic, Association Machiner, Memory; 64t bytes Machiner,	Maamum On-Line Storage, 21M bytes. MaaSman I/O Pontic 4 Distribution: CEM Vendor Sales Tenna: Purchase Purchase Price: 54:75 to 56,256 Maintenance: Return to manufacturing facility. Average Maintenance Fee: \$25 Deler Frist Installed: April 1900 Humber Installed: April 1900 Hum
Maximum Memory: 128K bytes	Distribution: End uper	Maximum Memory: 64K bytes	10
Multiple Users: No	Vendor Sales Terms: Purchase:	Multiple Users: No	
Maximum On-Line Storage: 1M	Purchase Price: \$75,000 to \$172,000	Material Offices Storage: 1000	3 R COMPUTERS, INC AVATAR TC3278
Maximum I/O Ports: 2	\$172.000	Maximum I/O Ports: 4	Moro TC3278
Communications Protectals: SDLC	Maintenance: On-sie. Return to	Distribution: OEM	Word Length: 8:16-brt
Oyles Maximum I/O Peris: 2 Communications Proteomis: SOLC Nestitudion: OEM Fendor Sales Torms: Purchase Maintenance On-sie	Maintenance: On-sis. Return to manufacturing facility Average Maintenance Fee: \$340 Mamber Installed to Date: Less than	Maximum Ov-Limb Brenger 16M tyres Maximum I/O Pretz Maximum I/O Pretz Vender Sales Terres Durchase Parchase Price IS 775 to \$3,005 Blassingance Return to rear/uncturing facility Average Marintanence Pret ISO Date First Indebted: August 1862 Name Pret Indebted: August 1862 Name Pret Indebted: August 1862 Name Pretz Indebted: August 1862 Name Indebted:	Word Length: 8:16-bit Operating System: CPIM, CPIM 86, MS-OOS
Maintenance: Charle	Marrier Installed to Date: Lass than	Maintenance Report to	MS-008
		manufacturing facility	Lampages Supported: Sinc: Assembler Minimum Memory: 64K bytes Minimum Memory: 256K bytes Mutigle Users: No Massimum Chi-Line Storage: 21M
FELEVIDEO SYSTEMS, INC.	(See Vendor Frolie Page V-21)	Average Maintenance Fee: \$20	Minimum Memory: 64K bytes
75405/20 Desktop	TEXAS INSTRUMENTS, INC.	Date Pivol systemed: August 1982	Maximum Memory: 256K bytes
Ford Lanethy B.Ivi	DRICK	5.000	Multiple Users: No
Perintop World Length: 8-bit Opensting System: CPSM 2.2 Enguages Supported: Cobol. Corten Basic, Pascal, APL, PL/1, C;	Personal	(See Vendor Profile Page V21)	bytes
enguages Supported: Cobol.	Word Longth: 18-brt		Manimum I/O Ports: 8
ortran Beac, Pascal, APL, PL/1, C;	Operating System: DX10	3 R COMPUTERS, INC.	Distribution: CEM
Browner Moreover SAX butter	Chie Based Loop Bear	AVATAR TO18 Deskipp	Vender Sales Terms: Purchase
Maximum Memory: 64K bytes	Maximum Mornory: 16K bytes	Word Laneth: 5-bit	Maintenance: Battern to
Upot Forth Branues Memory: 64K bytes Saximum Nemory: 64K bytes Suttings Users: Yes, 6 Maximum Do-Line Storage: 20M	Meximum Memory: 48K bytes	Operating System: CP/M	manufacturing facility
wites	Personal Word Length: 18-bit Operating System: CKTO Languages Stapperhet Sonc; Sasc (Ant. Pencil. Logo; Piet Marimum Mismer; 1961 bytes Marimum Marrier; 48K bytes Marigies Nese; No Seasonar On-Line Storage; 270K	Languages Supported: Casic:	Average Maintenance Fee: \$25
Maximum I/O Ports: 6		Desking Word Length: 6-bit Operating System: CP/M Languages Buspenried: Basic Assertoir Movimum Memory: 64X bytes Machinum Memory: 64X bytes Machinum Memory: 64X bytes Machinum On-Line Messerum On-Line Messerum On-Line	bytes: Masterium IVO Protec 8 Distribution: CEM Vandor Sales Termis: Purchase Protribuse Protec 51 395 to 97-295 Maintenance: PRUM To marufacturing Sales 1995 to 97-295 Average Maintenance Prot. 925 Average Maintenance Prot. 925 Date Print Installed March 1963 Nameler Mattaled to Opies Loss From Nameler Mattaled to Opies Loss From
ommunications Protocols:	Maximum I/O Ports: 4	Maximum Memory: 84K bytes	10
Mynchronous, SULC	Communications Protocols:	Multiple Users: No	Committee of the last
Vender Sales Termer Purchase	Desirance Produces	Meserum On-Line Storage: 21M	TIMEX COMPUTER CORP.
Surchase Price: \$17,000	Vender Sales Terres: Purchase	Maximum I/O Partie 4	
Meanmen On-Line Bleirage: 200 / y/100 Maximum I/O Pertix: 8 Maximum I/O Pertix: 8 Maximum I/O Pertix: 9 Maximum I/O Pe	Communications Protocols: Asynchronous Desiribution: Theo-party Vender Sales Terms: Purchase Purchase Price: \$1,500	Distribution DEM	Word Longth: 8-brt
And Farm measures: Suplember			
Aurober Installed to Date: 100	manufacturing lacitly Date Pirst Installed: 1961 (See Vendor Profile Page V-21)	Tyres Maximum to Ports: 4 Disvibusion COM Vendor Spice Torms: Purchase Purchase Price: 52 276 to 55.895 Maintenance: Return to manufacturing facility	Word Languit: 8-bit Languages Supported: Bosc Mississan Money: 2K bytes Meximum Memory: 16K bytes Multiple Users: No

animum I/O Peris: 3 withbullor: Third-party archase Price: \$50 sertimence: Third-party set First Investible: August 1902 white Installed to Date: More an 190 003 like Vandor Profile Page V-21)

miles involve Protes Page 1/21/1
"CONTINUA AMERICAA, INC.
EN 1602.

(See Vendor Profile Page V-21)
TOSSMEA ASSERVICA, INC.
EN-100-1
Word Processing system
Word Length: 8-be
Operating System
Word Length: 8-be
Operating System
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Meanum On-Line Storage: 1 1M bytes Meanum I/O Peris: 3 Centinancations Protocola: Asynchronous Destribution: Third-party Westor Sales Terms: Furchase Purchase Price; 59:495 Maintenence: On-site Third-party Date First Installed: 1982 TOSNIMA ABERDA, 1962.
T-190
T-190
T-190
Word Length B-bit
Operating Systems CPM
Languages Supported: Cotot,
Fortran, Basc, Pascal, T-disso
Minimum Memory: Bit Cyton
Maximum Memory: 6Ht Cyton
Maximum Memory: 6Ht Cyton
Maximum Ch-Line Starage: 590X
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ronous sities: Third-party r Sales Terms: Purchase see Price: \$735 to \$3,376 meses: On-site. Third-party

Masimum Cir-Line Storage: 1.2M bytes.
Masimum (O Peel)
M m Memory: 64K bytes um Memory: 64K bytes i Users: No um On-Line Stenege: 500K

Massman LO Ports, 3
Communications Protocolis:
Asynchronous
Distributions: Third party
Vendor Sales Terms: Purchase
Purchase Procs \$2,995 to \$5,190
Maintenance: On site: Third party
Date Print Installed: June 1501
Hamber Installed: Id Description

TOSHIBA AMERICA, INC. T-250/4
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Word Length: 8-bit
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Languages Supported: Cobol:
Fortine: Reserv. Manual Manu

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Average Maintenance Fee: \$25
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Maximum Memory, 2595 bytes
Maximum Memory, 2595 bytes
Maximum On-Live Storage: SM
Maximum On-Live Storage: SM

Nearly two million computer involved professionals around the world rely on our publications for the news they need.





nam Memory: 126K bytes mare Memory: 256K bytes ple Users: No mare On-Line Storage: 1,2M ronous rulien: Third-purty Vandor Sales Terms: Purchase, Lesse Perchase Price: \$4.750 Mentenance: On-one, Third-purty Date First Inetalled: September 1887

1962 Number Installed to Date: 500 — 1,000 1.000 (See Vandor Profile Page V-21)

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The Community of the Co Vendor bases rames: Purchase. Lease Purchase Price: \$11,950 to \$18,495 Maintenance: Return to manufacturing facility. Throtperly Date First installed: Fothusry 1982 Humber Installed to Date: 307

Date First Installed: July 1981

**MECTION GRAPHIC, INC.
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West Length: 8-bit
Coversing System C. First
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Number installed to Date: 307

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**PATERS, INC.

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nunufacturing facility. There party Date First Installant, Adv 1961

VSGTOR GRAPHIC, INC.
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Distribution: OEM, Third-party Vendor Salos Torrus: Purchase Purchase Wrice: \$14,000 Maintenance: Third-party Date First installed. May 1983 (See Vendor Profile Page V-27)

Dets Print Installed: May 1983
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Cost Print Installed May 1003
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Netribution: Third-party Archese Prion: \$14,000 to \$26,000	Communications Protocols: Atynchronous	EVCOM, INC.	ZAX CORP. THE BOX IS
PAVE MATE, INC.	Distribution: End user Vandor Sales Terres: Purchase	Micro e	
		Word Langth: 8-tst	Word Length: 15-bit Operating System; CP/M 68000: UNIX
ektop	Maintenance: On call Average Maintenance Fee: \$35 Date First Installed: 1978 Mamber Installed: 1978 Mamber Installed: Date: 8.000 (See Vandor Profile Page V-22)	Languages Busported: Dasc Minimum Memory: 15X bytes Measurem Memory: 56K bytes Maximum On-Line Sterage: 512K	Operating System; CPAI 68000:
ord Langth: 8-bit	Average Maintenance Fee: \$35	Measure Memory: 64K bytes	Larguages Supported: Cotos. Forter Basic Pascal C. Forte, PL Ministrum Momeny: 64K bytes Maximum Momeny: 812K bytes Multiple Users: Yes
oreting System: CPM 2.2; CPM 0. APM 2.0, TURBO DOS	Physiper Installed to Date: 8 000	Manager Oad in Sterees 5770	Fortran Basic Pascal C. Forth PL
rigueges Supported: Cobol. Plran. Basic, Pascal. RPG: APL.	(See Vandor Profile Page V-22)	bytes	Maximum Memory: 812% bytes
	WICAT SYSTEMS, INC.	byse Maxemen IIO Parts: 1 Communications Protection Asymptomical Synthetical Contractions Distribution: End user Various Education Functions Purchase Price: \$4,000 to \$13,000 Maintenance: On-size Return to manufacturing facility. Ceste First Intendisce. November: \$982 (See Vandor Protie Page V-22)	Multiple Users: Yes
nevers Memory: 128K bytes stimum Memory: 128K bytes	SYSTEM 150	Asynchronous Synchronous	Meximum On-Line Storage: 40M bytes
tomam Memory: 128K bytes		Dretribution: End user	
Atipte Users: Yes. 2 summum On-Line Storage: 2004	Word Length: 16/32-bit	Purchase Progr. 54 500 to 513 000	Asynchronous
tes mesunications Proteccis:	Operating System: UNIX, MCS, CP/M	Maintenance: On-sie: Return to	Asynchronous Debribution: End user Yender Sales Terms: Purchase Purchase Price: \$7,995
moternous Sentences	Languages Supported: Cobot Fortran, Basic, Pascal, APL. C.	manufacturing facility	Purchase Price: \$7.995
professions, Synchronous dribudien, OEM inder Seles Terms: Purchase shees Price: \$1,995 to \$3,995		One Venter Brills Dave V.00	Marrienance: Thro-party Date First Installed October 1983
ndor Sales Terms: Purchase	Assertitor Minimum Momeny: 256X bytes Maximum Momeny: 1:5M bytes Multiple Upon: Yes. 6 Maximum Co-Line Storage: 60M		
to First installed to Date: 2,000 to S1,900 to First installed March 1982 installed to Date: 2,000 to Vendor Profile Page V-22)	Maximum Momery: 1 5M bytes	XYCOM, MIG. RACPAC-12	ZEDA COMPUTERS INTERNATIONAL, LTD. ZEDA 526
rebor irretailed to Date: 2,000	Maximum On-Line Sterage- 60th		ZEDA 520
e vandor Prome Page V-22)	tytes	Word Langth: Brit Languages Supported: Basic,	Deskrop
AVE MATE, INC. RES 2000	bytes Maximum I/O Ports: 8 Communications Protocols:		Word Length: 8-bit Minimum Manuary: 64K bytes Manmam Manuary: 128K bytes Muttiple Users: No Manuary: 00-Line Storage: 20M bytes
NEE 2000		Minimum Memory: 16K bytes Maximum Memory; 64K bytes Multiple Users, No Maximum On-Line Stenege: 512K	Meanman Moment 128K bytes
skilop and Langth: 6-bit	Bayrchronous SOLC X 25. HOLD	Masivus Memory: 64K bytes	Multiple Users: No
erating System: FLEX, MTS	Distribution: OEM	Maximum Coul ins Sterage, 61 %	Maximum On-Line Storage: 2054
00. S-DOS -	Purchase Price: \$6,500 to \$16,500	bytes	Maximum I/O Ports: 4
reproper Supported Sand	Maintenance: On-site; Return to	Maximum I/O Porter 1	Communications Protocols:
iguages Supported Sonc imum Memory: 54K bytes simum Memory: 54K bytes simum Memory: 54K bytes simple Users: No assum On-Line Storage: 20M	Bisynchronous, SOLC, X.25, HOLC Distribution: CRM Yendre Sales Termas Purchase Purchase Passa \$5,000 to \$15,500 Maintenance: On-six; Return to reanufacturing facility. Tr Assingle Maintenance Fee: \$146, bete First Instal	bytes Maximum I/O Portie 1 Cerminalizations Proteocole: Abyrchronous, Synchronous Deshivation: End user Vendor Salas Termin: Punchase Prunchase Prunch \$500 to \$20.000 Meentenance; Christian 10 marchachung Salas (November 1962 Date Plast Intelligence).	Communications Protectés: Asynchronous Debrivation; (JEM) Vender Sales Terms; Purchase Purchase Price: \$3,000 Maintenance: CGM Average Maintenance Fee: \$30 Debr First Installed in Dies: 100 —
Aspie Users: No	Date First Installed: October 1981	Destribution: End user	Vendor Sales Torms: Purchase
statum curcus astrade: 500	(See Vendor Profile Page V-22)	Vender Sales Terres: Purchase	Purchase Price: \$3,000
os simum (/O Porte: 16	XEROX CORP.	Memberge: On-site Return to	Average Maintenance Sear Phy
	420-4	menutacturing facility	Date First Installed; February 1961
tribution OFM		Date First Installed: November 1962	Number installed to Date: 100
fritetion: OEM Index Sales Terms: Purchase rchase Price: \$2,965 to \$5,000 to First Installed: February 1979	Personal Operating System: CP/M Languages Supported: Cobol, Fortran Series Missimum Memory: 64K bytes Matthews Memory: 64K bytes Matthews Memory: 64K bytes Matthews On-Line Storage: 11M Incies.	ZAX CORP.	(See Vandor Profile Page V-27)
chase Price: \$2,995 to \$6,000	Fortran Rase	THE BOX	
	Minimum Memory: 64K bytes	Word Langel: 8-bit	ZEDA COMPUTERS INTERNATIONAL, LTD.
STERM DIGITAL CORP.	Medicin House bit	Operating Bystem: CP:M	INTERNATIONAL, LTD. ZEOA 500
htm.	Maximum On-Line Storage: 11M	Languages Supported: Cobol	DesAsse
rd Langth: 15-bit	Communications Protocols	Minimum Momenty Bill Sylve	Constitute Statem 750000
Micro rel Length: 15-bit white graphs: 15-bit white graphs: LCSD-P1 quakept Supported: Pascal Ada when Memory: 128K bytes hister Memory: 512K bytes higher Users: No nelstern Oc. Lane Storage: 40M pt	Asynchronous: Synchronous.	Word Langth: Bott Operating Pystem: CPIM Languages Supported: Cobol Forten Sass: Pascal C. Forth. PLM Minimum Marency: 812K bytes Mazimum Marency: 812K bytes Multiple Marency Mr. 4 Maximum On-Line Storage: 40M	ZEDA SSE DINATOS DINATOS Week Length: 8-bit Operating System: ZEDOS Languages Supponde: Cobol- Fortran: Basic: Pascal PLII, C Identification Sensory: 1294 Cyrica Basicipas Sheemay: 1294 Cyrica Basicipas University Basicipas University Basicipas University Basicipas University Basicipas University Basicipas University Basicipas Children Basicipas Children Del Line Senrege: 2006
State Marrory 126K rades		Multiple Users: Yes 4	Fortran Basic Pascal PL1. C
sincen Mornery: 512% bytes	Detribution: End user; Theo-party	bytes.	Maximum Manager 126K Index
Spie Users: No	Purchase Price: \$2 505 to \$4 845	Maximum I/O Ports: 18 Communications Protocols:	Multiple Users: No
a concern supreparation	Maintenarios: On-site: Remote	Asynchronous	Maximum On-Line Storage: 2006
cimum t/O Peris; 8 stranscellons Protocols: formous	Perchase Price: 52 505 to 54 845 Maintenance: On-one: Remote degnostics: Return to manufacturing facility.	Apyrchronous Disentivister End user Vendor Batter Terrais: Purchasse Purchasse Purchasse Purchasse Purchasse Purchasse Princip St. St. Stantonianous: Third-purly Dates First Institute: December 1981 Marrises Instituted to Butter 500 (See Vendor Profile Page V-22)	Meximum I/O Ports: 3
originations Protocole:	Date First Installed: July 1982 (See Vender Profile Page V-22)	Vendor Sales Terms: Purchase	
Heution: Find user	(See Vendor Profée Page V-22)	Maintenance: Thrd-carty	Distribution OFM
richonous ribution: Find user der Sales Terms: Purchase chase Price: \$7,000 to \$15,000	XITEK CORP.	, Date First lestalled: December 1981	Communications Protection: Adjustromous, Synchronous Distribution: OCM Purchase Price: \$5,000 to \$8,000 Date first Installed; June 1979 Humber Installed to Date: 1,000
or First Isotatiod, March 1962 other Installed to Date: 500 —		(See Vender Builty Base 11 22)	Date First Installed: June 1979
First Installed, March 1962	More		
ther Installed to Date: 500 —	Word Length 8-bit Operating System CPM 22; CPM 3.0	ZAX CORP. THE BOX II	ZENDEX CORP.
Vendor Profile Page V-22)	30		Micro
	Minimum Memory: 64K bytes Mazimum Memory: 64K bytes Multiple Users: No Maximum On-Line Storage: 26M	Word Length: 16-bit Operating System: CPIM 85: MS- DOS	
TERM TELECOMPUTING	Multiple Lineary No.	Operating System CP/M 86: MS-	Operating System: CPIM 86: 1525
IF.	Maximum On-Line Storage: 2644	Congresses Supported C	Corres Basic Preced C
		Minimum Memory: GAX bytes	Minimum Mossery: 64K bytes
TOTAL APPRENENT AT CHARTY	Communications Protocols	Measure Memory: 812% bytes	Maximum Messery: 54K trytos
Longth: 6-tet	Asynchronous	Carguages Supported: C Minimum Memory: 64K bytes Massimum Memory: 812K bytes Multiple Users: Vis. 18 Meximum Cir-Line Storage: 40M	Week Languit II-ox Offina 26: 1525 Canguages Supported: Cobot. Fortran, Basic, Pascal, C Managuages Supported: Cobot. Fortran, Basic, Pascal, C Managuages Maximum Messacy; 54K bytes Maximum Messacy; 54K bytes Maximum Messacy; 54K bytes Maximum Co-Line Starrage; 2066 Maximum Co-Line Starrage; 2066
sting System CP/M	Distribution OEM	bytes	
SSO Iffic Application: Air Quality storing if Length: 8-bst string System: CPAA surges Supported: Custom:	Purchase Price: \$55 to \$99	Communications Business	
num Moreory: 16K bytes	Maintenance: Return to	Asynchronous	Distribution End user
nde Ukaner Yen 2	Assessed Maintenance Fee: 537	Distribution: End user	Vandor Sales Torres: Purchase
main Marmory: 16K bytes Imam Momery: 20K bytes pto Useric Yes, 2 Imam On-Line Storage: SM	Alexandra (ID Portic 2 Communication Produceds: Asynchronous Distribution: CEM Vander Sales Termie Purchase Pruchase Price 355 to 890 Maintenance Review 1990 Maintenance Review 1990 Maintenance Review 1990 Maintenance Review 1990 Maintenance Review 1990 Maintenance Review 1990 Maintenance 1990, Three 523 Date First Invalated: June 1982 Manchel Institute to Date: 200 (See Vendor Prode Page V-20)	bytes Maximum I/O Pertis; 18 Communications Protectes; Asynchronous Deshbutes: End user Vender Eates Terms; Purchase Purchase Price: 87,995 Maintenager; The Conty	Asynchronous Distribution: End user Vander Sales Torres: Purchase Purchase Price: \$6.095 to \$18.000 Manneranner: Return to manufacturing lacity Date Pirst Installer: March 1991
mum I/O Perte: 258	Mumber installed to Date: 300	Maintenance: Therd-party Date First Installed: March 1983	Many facts were brooken

Special Approache: PFOCHS
Confinit
Word Length: 18-bit
Operating Bystem: CPIM 35
Languages Supportind: Cobot,
Fortian Basic, Pascal; C
Mitterman Memory: 15 2K cytes
Maximum Memory: 15 2K cytes
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Maximum Memory: 16 2K cytes
Maximum Memory: 16 2K cytes
Maximum On Line Shorage: 160M

nications francois swimministens Protocols: ynchronous setheutien: End user ender Sales Terms: Purchase whose Price: \$8.210 to \$24,000 shintenance: Return to anufacturing facility sets First Invalided: June 1981 , umber levitatied to Oute: 12

lord Length; 18-bit persiting System: CPIM 86 inquirings Supported: Cobot; critan, Racc, Pascal, C incream Merceny; 128K bytes uninum Merceny; 128K bytes uninum Merceny; 130 bytes uninum Merceny; 130 bytes uninum Stemen; 10 animum On-Line Storage; 20M animum On-Line Storage; 20M

municulations Protocols: Information User Information Conference Purchase chase Price: \$2,741 to \$10,250 information: Return to shickburning facility. First Involution: Various 1982 four Institute to Date: 15

control Reprostors Process Control Ford Langth: 16-oct Specialing System PitX Regulation Supported Fortrart social C. Regulation Memory: 512X bytes leading Memory: 512X bytes leading Memory: 512X bytes leading Memory: 16 bytes little Users: Yes Significant Storage: 160M nunications Pro-phyrocus busines: End user ler Sales Tenne: Purchase Asses Prices: \$1,995 to \$29,000 rismance: Return to unicchumg tacity a Paral Installed: January 1962 Two Installed to Date: 4

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Specific Application, Process Control Word Length 16-bit Operating System; CPIM 86 Lenguages Supported Coco. Fortan, Basic Pascal G Manneum Manneyr, Gilk bytes Manneum Menneyr, Gilk bytes Mattigle Users: No Mattinum Orr-Line Storage; 1M Mattinum Orr-Line Storage; 1M

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Massimum (de-case Storage 11th Datasimum (A) Partier 3 Communications Produced Approximate Approximate

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Mend Langth: 6-bit
Operating Systems (PVM, ZEUS
Languages Supported: Cotool.
Fortran, Baser, Precal APIL: RLVI, C
Belanuan Memory, 640: typins
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Memory, 2560: typ

Machinan CH-Line Interage - Im-bytes Meanman HO Peris: 3 Communications Protocole: Asynchronous Development Protocole: Asynchronous Development St. 2000 to 53,000 Practication: Throd-party Practical Practicals Protocole: 2,000 to 53,000 practication (Solid): Throd-party Development (Solid): Th Maximum OV-Cree transport of the popular of the pop

Languages Supported: Cobol. Fortran, Basic Paical Minimum Memory; 128K bytes Maximum Memory; 756K bytes Maximum Memory; 756K bytes Maximum On-Line Storage; 80M Joseph On-Line Storage: 80M bytes Maximum I/O Parts: 3 Communications Photocells: Asynchronous, Synchronous Dissibutions. Thro-party Purchase Price: \$3,200 to \$4,100, Maintenance, Theriparty Delto Part Installed: September 1982; ZOMC 0081 Micro Werd Langth: 8-bit Operating System: CDOS Languages Sageured: CDOS-FOTRE: Basic Plassal C Biblinum Memory: 128K bytes Machine Unexis Microsoft Statistics Microsoft University Statistics Microsoft University Statistics Microsoft Original Confession (In Bibling 164D) bytes Microsoft Original Confession (In Bibling 164D) bytes Microsoft Original Confession (In Bibling 164D) 1982 Number Installed to Della: 10,000

Maximum On-Line Storage: 640X bytes: Maximum (IO Ports: 3 Communications Prosocols: DAA Stellands: For Communications Prosocols: DAA Stellands: For Communications Process: Purchase Prices: S12 000 to S200, 000 Maximum Sec

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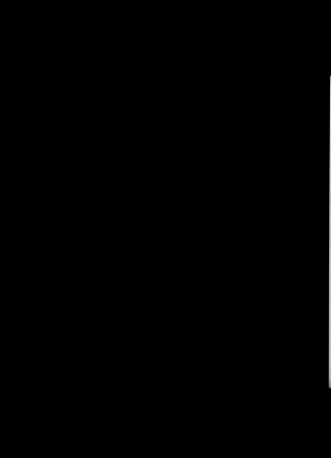
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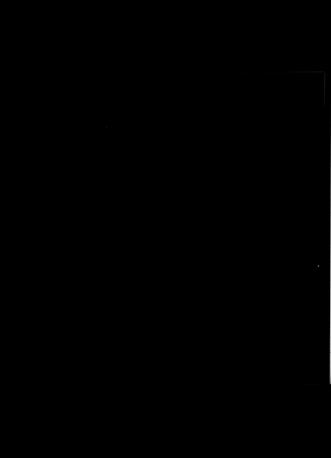
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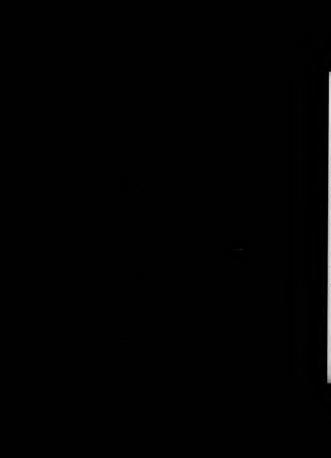
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